



ACCESS

Achieving Circularity in Cities through
Environmental Sustainability of Sports

CIRCULAR ECONOMY ASSESSMENT REPORT

Qualitative and quantitative
assessment of the participating sport
organisations circular economy and
environmental performances

ACHIEVING CIRCULARITY IN CITIES THROUGH ENVIRONMENTAL SUSTAINABILITY OF SPORTS

2.1: Circular economy assessment report

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Abstract

This report comes as the final result of the project's first phase which looks back at the online interviews, site visits and quantitative assessment of the participating sport organisations' circular economy and environmental performances. It contains the interview reports conducted during the months of January, February and March 2023, as well as some observations from the subsequent site visits and the application of the previously developed KPI tool towards the end of spring and early summer 2023. The report is a mix of empirical insights, observations, conclusions, interpretations and suggestions for improving the circular economy and environmental performances of the participating sport organisations.

The interviews, site visits and KPI assessments were carried out by the projects two technical partners, ACR+ and Sant'Anna School of Advanced Studies and this publication is hereby presenting them merged.

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1. INTRODUCTION

This report was drawn up after the construction of a circularity measurement tool for the ACCESS project partners and aims to present both the circularity check-up tool and an "assessment" relating to the circularity of the project partners.

The ACCESS project is funded by the Erasmus+ Sport program of the European Union and coordinated by the Association of Cities and Regions for sustainable Resource management (ACR+); among its main objectives is to reduce the gap between the current environmental performance of sports clubs and associations, their strategies and practices and the strategies of the respective city or region where they are located and where their activities take place.

The tool, developed in agreement with the project partners, makes it possible to evaluate the circularity of the partners in the management of sporting events that take place in urban contexts and to identify possible improvement actions, in line with the objective of establishing synergies with the cities increasingly virtuous from the point of view of circularity.

Based on the information and data collected, through the application of this tool it is possible to provide feedback in terms of performance evaluation and acquirable margins for improvement, through an overall indicator ("circularity index") and a target system that identifies the sectors (Accommodation, Food and Beverages, Mobility, Purchasing and Suppliers selection, Waste management, Stadium infrastructural improvement and maintenance) in which the sports organization performs best.

The use of the tool can be configured as a sort of analysis of the distance with respect to an "ideal" situation of circular economy applied to the organization of sporting events virtuously in synergy with the municipalities in which they take place, in order to return an effective measure of "How circular is" the setting of sports activities, supply and accommodation choices, waste collection strategies, up to the maintenance of the infrastructures themselves. The tool also aims at recognizing and evaluating opportunities to make the management of sporting events more circular, by identifying possible inefficiencies in the management of sporting events, from procurement and accommodation choices, through waste collection strategies, up to the maintenance of the infrastructure itself.

In fact, it is important to also consider the indirect effects of one's own environmental management. For this reason, partners will play an important role in making the entire management of sporting events more circular. We therefore try to identify, along various intersections between sports organization and municipality, to direct all those choices that concern the organization of a sports event towards a sustainable model.

The main objective of this tool is therefore to highlight "possible opportunities", for the project partners and for the municipalities in which the events take place, to develop their activities in the sense of greater "circularity", enhancing the opportunities already currently offered by the synergies established today in which the partners operate or the options that can possibly be pursued by having a more profound impact on organizational choices and approaches (e.g.: Accommodation, Food & Beverages, Mobility, Purchasing & Suppliers selection, Waste management, Stadium infrastructural improvement and maintenance.).

2. METHODOLOGY

In preparing the assessment tool, the most relevant and accredited sources on the topic of measuring circularity were used at the date of preparation of this report. Specifically, in the preliminary phase of construction of the tool, a mapping of the existing tools and approaches for measuring circularity was carried out, in order to identify a list of indicators that could better adapt to the objective of this project funded by the EU Erasmus+ : Reinforce the synergies of the current environmental performance of sports clubs and associations, their strategies and practices and the strategies of the respective cities or regions in which they are located and where their activities take place.

To this have been added numerous sources related to the academic literature which are cited in the bibliography section of this document.

The tool, in order to include a large part of the interactions between sports realities and municipalities in the field of circular economy, consists of the following sections:

- ⚙ Accommodation
- ⚙ Food and Beverage
- ⚙ Mobility
- ⚙ Purchasing & Suppliers selection
- ⚙ Waste Management
- ⚙ Stadium Infrastructural improvement and maintenance

Within each section, there are a series of indicators to which the answers provided by the partners during the interviews and/or during the site-visits have been associated.

The questions submitted to the partners are of two types: binary, with possible response "yes" or "no", or with closed multiple choice. Furthermore, the possible types of questions are governance, operational, with quantified indicators, with reference to the implementation of specific practices.

These are formulated clearly, briefly, and direct and each answer is associated with a score which contributes to the final evaluation:

- ⚙ SCALE from 1 to 5 qualitative type (e.g., it is a practice that the organization always adopts; that the organization often adopts; limited spots; that the organization would like to start adopting within a year; which the organization never adopted);
- ⚙ SCALE from 1 to 5 semi-quantitative type (e.g., for 100% of the events; for more than 50% of the events; for about 50% of the events; for less than 50% of the events; for 0% of the events);
- ⚙ SCALE 0-100% (range of 10%).

An evaluation scale was associated with each of the indicators (often with 3 or 4 values, other times on a percentage scale) which helped to outline the result of the circularity measurement tool for that specific section.

In the case of the "Accommodation" and "Food and Beverage" and "Stadium infrastructural improvements" sections, 12 indicators were included: 13 for "Purchasing and Suppliers" and 16 for the "Mobility" and "Waste Management" sections.

For each section considered, an event life cycle approach is adopted. Specifically, the activities and choices made with reference to the pre-event, event and post-event phases were taken into account.

From the compilation of the 81 overall indicators, once associated with the measurement scale that varies according to the answer, it was possible to outline an overall performance, given by the sum of the performances of each single interaction/section.

3. GUIDE TO READING THE REPORT

This report aims to summarize and comment on the results deriving from the application of the tool for assessing circularity based on the synergies that exist between sports organizations and the territorial organizations that host the venues where the sports events take place.

It should be noted that this tool intends to be the basis of a work that does not intend to be exhaustive in its first version but can rather spread and complete with successive steps and additions, bequeathing to the sporting context a tool that allows to "measure" the synergies between the aforementioned bodies and to favour their replicability within the entire movement.

It should also be noted that, for the purposes of the discussion, some indicators were not taken into consideration, as the data relating to these were missing and/or the information indicated was not pertinent and/or the information indicated was partial. Where the data are missing to measure a given indicator, the latter is associated with the wording "not available". The indicators for which data are not available are not counted for the purpose of determining the phase and final performances.

4. PROCESSES, OPERATIONS AND CIRCULARITY AND ENVIRONMENTAL PERFORMANCE MEASUREMENTS

4.1 FC PORTO

4.1.1 Interview reports

Partner	FC Porto
Topic	Waste management
Interviewee	Teresa Santos
Position	Waste manager and head of sustainability
Interviewers	Luca Marrucci, SSSA Rachele Stranieri, SSSA Daniele Casiddu, SSSA
Date	24/02/2023
Duration	45 minutes

Roles and Responsibilities

Teresa Santos has been the sustainability manager in FC Porto since 2007. She is responsible for environmental quality in FC Porto's owned infrastructures and also has tasks related to the waste management.

Waste Management

In FC Porto there is an inner policy regarding specific environmental approach, as mentioned in the sustainability report.

FC Porto has reached Global Quality Certification ISO 9001 and the Estadio Do Dragao in 2017 has obtained the ISO 14001 certification.

During board meetings, environmental sustainability is always a point of discussion. Into the FC Porto's projects related to sustainability, also the municipality is involved with other partners like LIPOR.

The priorities in the FC Porto sustainability agenda, concerned to the desire to show what sport can do to pursue this address are various: from wellness, awareness raising, elimination of single use packaging, reusable cups, avoid waste food, just to name a few.

FC Porto has some technicians that are in charge of the cleaning service and there is a direct connection between Teresa's activities and theirs.

There are a lot of data that are gathered from FC Porto: it allows to compare every year the progresses.

The other employees involved waste management in their job description.

During a match, the garbage is gathered through the various sectors. There are 11 areas, every one with a big container that the cleaning service brings in a specific room. Here is a table where the waste team splits all the waste, although there is a separate collection. Also, the already gathered and separated waste from fans is checked by the cleaning service team.

Only in the food and beverage area the garbage is gathered and then they are sorted to the own belonging category, in the other sectors there are separate bins for the separate waste. They split everything, any container, also the already separated and dedicated bins. For food and beverage there is a separate organic collection bin.

They did 2 surveys for fans in the last 3 years, to gather information about their behaviours, their expectations and obtain feedback directly from them.

In Portugal is not allowed to bring external food into the stadium and from a survey that was recently conducted, emerged that the unused food is predominantly undonated. Now there is a specific gathered point for this undonated food that can be donated to those in need.

They have a good relationship with the municipality, with frequent meetings to coordinate necessities and developments. The recent joint acquisition of a can compactor acts in this direction. There is also a fruitful agreement with the local supplier LIPOR, that recovers, and treats the municipal waste produced in eight municipalities of the Greater Porto Area and at the same time, continue to share good practices with the population, which are supported by awareness campaigns.

They have lots of best practices but in 3 months, the general waste amount decreased thanks to the compactors and the modifies apported to the collection system, permitting more than 6 tons to be directly compacted.

As part of their sustainability vision, there is both internal and external training with the collaborators that work for FC Porto.

Every match they try to understand if there are new components and staff that they have to educate, to align to their sustainability vision and to the sustainability tasks for the waste management. The staff presence is based on a very dynamic process, so they are in contact with all the sectors to train the new entries. A part of the training is supported by a waste management company that already works for Wembley Stadium as. This supplier provides some training to their waste management staff.

They also involved the players to spread the message, as happened for the Life Tackle project.

On the website there isn't a specific session for sustainability, there is also the sustainability report but isn't easy to visualize immediately. Porto Canal is the TV channel where they spread the message towards sustainability and through it they try to involve always more of our fans in this route.

In the past they had also some apposite operators that suggested to the supporter at the stadium how to separate the garbage in the dedicate bin.

Only by showing the stadium before and after the matches is easy to understand the big amount of waste produced during the events.

There is also some waste operator that checks if also in the offices are kept the shared environmental initiatives, and he works 5days per week.

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They have an agreement with LIPOR, based on some specific requirements. They send us the indications regarding some specific tasks.

The inner KPIs are used to measure the actions taken in place, in order to track the progress and improve any action measured, for example decrease the amount of general waste, try to understand which issues there are and try to change them.

Partner	FC Porto
Topic	Stadium infrastructural improvements and maintenance
Interviewee	Ricardo Carvalho
Position	Facility Manager
Interviewers	Luca Marrucci, SSSA Rachele Stranieri, SSSA Daniele Casiddu, SSSA
Date	24/02/2023
Duration	45 minutes

Roles and Responsibilities

Ricardo Carvalho is the facility manager of FC Porto, and his department is an asset that manages all the facilities that turns around FC Porto.

His tasks have changed a lot during his career and especially when FC Porto changed its new facility in Estadio Do Dragao, a new approach was introduced.

Prior to becoming the asset manager, his competences were only concerned with safety, security, environment, consumption, and user experiences; today it's involved in a broader approach.

Facility Management

The facility manager is an umbrella for all these things, and sustainability is a connection about what they do. This responsibility relates to all the facilities: training centre, stadium and headquarters, museum. He has to coordinate all the interventions these facilities need.

FC Porto has a general policy, and in 2017 Estadio Do Dragao obtained the ISO 14001 certification. There is a policy, they have the scope out for the certification and the stadium maintenance, stadium facility following the guidelines the policies present. These policies affect the way of working and they have the aim to reduce the impact of the activities.

The priority today is energy, due to the cost: they follow some protocols they have signed. The idea is to create energy-efficient buildings. Excluding this historical period of increasing costs for energy, the priority is having a good operation management: you can also have an energy efficient infrastructure, but without an operational control of all the aspects is difficult to obtain great results. For example, in order to adhere to the sustainability guidelines, they recently avoid replacing all the lighthouses, and they proceed substituting malfunctioning LED lamps only, because was taken in consideration also the waste management aspect.

Today they have sun technology for favouring the grass growth and they're continuously reducing the time the pitch-lighting system stays on.

Sometimes they have technical meetings before the event to plan all these situations. They have KPIs in terms of energy and thanks to them they can measure their energy consumption, but they want to go

deeper and understand what they can improve. Everything FC Porto is doing isn't an obligation, are voluntary activities related to their internal addresses.

Another aspect strongly connected to buildings, new facilities and any aspect is biodiversity, where they have introduced legal compliance.

They train the employees on improving their behaviours and they have some policy for energy consumption during their activities, for example. They communicate internally in different ways: daily they send screenshots about consumption, and they invite and sensibilise their employees about the importance to don't waste anything.

Also, towards the supporters they send the newsletter, in the stadium they send some videos in the giant LED screens, but the activity towards supporters is focused mainly on communications, nor direct training.

The stadium Do Dragao is owned indirectly by FC Porto, more precisely is owned by a company that is owned by FC Porto. The training centre is owned by the Foundation, a private organisation that has an agreement with FC Porto for the training centre management. The headquarters are in the stadium, so also them are owned (indirectly) by FC Porto.

In the Stadium they have an agreement with the municipality for a decarbonisation project and they are currently working with city actors to reduce their environmental impacts.

They monitor the results internally about energy efficiency and equipment, while for the water consumption there is a dedicate team that does it.

Often, they audit and check through site-visits that the activities are going well, using KPIs, graphics stats, and in these ways, they can compare the performance of their management with the other years.

FC Porto calculate its environmental footprint, but they don't offset our carbon emissions. It's a future goal but today their board is focusing mainly on energy efficiency.

Partner	FC Porto
Topic	Food & Beverages, Mobility
Interviewee	Carlos Carvalho
Position	Security and Operations manager
Interviewers	Luca Marrucci, SSSA Rachele Stranieri, SSSA Daniele Casiddu, SSSA
Date	03/03/2023
Duration	1 hour

Roles and Responsibilities

Carlos Carvalho has worked for FC Porto as Security and Operations Manager since 2013 and is in charge of the Operations Department at the Estádio do Dragão.

Food and Beverage Management

The catering management covers the hospitality areas, which consist of the presidential box and other boxes, 24 boxes on the east side and 64 on the west side. There are the VIP box and a Coca Cola box, a 35-person box and this is also a VIP area. Then there is also the VIP tribune. Different services are provided depending on the group segment, there are 3-star boxes, 4-star boxes, and 5-star boxes.

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They are trying to improve the service by differentiating the offer according to the groups, but one of the main problems is related to the lack of space.

They currently have several contracts in place with different companies for catering services. The main challenge is to have one caterer who is responsible for all areas in order to maximize space, which is currently divided among the diverse catering providers. This option would maximize operations, service quality, and business volume.

One of the conditions they will introduce in the new contract is to have a varied offering that also considers vegan menu, vegetarian menu, and in general, to have bars and kiosks with varied offerings.

Matters related to the contracting and management of food and beverage services are shared and discussed with the board.

Contracts with caterers are required to meet certain sustainability requirements. Food and beverage suppliers must know and comply with FC Porto's policy not only in terms of sustainability, but also in terms of access, operations, and compliance with local laws and legislation.

All catering-related and budget-related data are collected.

At the beginning of 2023 an analysis related to food waste was implemented in order to assess the level of food waste currently in the different areas.

The waste question needs to be balanced with the need to have stocks for the VIP areas so that nothing is ever missing and there are no complaints.

Annually a survey is conducted in both the common and VIP areas, in this case through the commercial department, on various aspects. He is not sure if the issue of food has been analysed in these interviews. The need to differentiate the service by including more sustainable menus comes from an internal reflection.

At the moment, there have been no communications to present the effort made, not even initiatives to raise awareness among suppliers about choosing sustainability. They have a strategic vision and are working with the board, to finalize a broader project to do communication that is suitable for all parties, not only for fans and VIPs in terms of catering, but also for mobility, for all fans, even VIPs, home, away and everything else.

The main initiatives that have been implemented to date involve the use of glass cups and the elimination of plastic from the stadium. This initiative has been managed in collaboration with the police, who for safety reasons advise against the use of glass. Another initiative concerns the monitoring of waste in order to reduce it, collaborating with the relevant institutions.

In terms of social sustainability, projects aimed at including blind people and people with autism are mentioned.

Regarding single-use plastic, they allow people who come with purchases from the street food outside the stadium to enter the stadium with the reusable cup in order to reduce single-use plastic. The choices have always included the elimination of single-use plastic. In fact, most recently in the VIP stand, single-use plastic was eliminated, and the glass cups were introduced. To combat food waste, all products that can be donated at the end of the games were donated. So, one of the requirements that the caterers have is that all food that remains at the end of each game must be donated to institutions. For example, an institution they work with directly helps the homeless. The food is donated to them.

With reference to the selection of suppliers the priority is represented by the necessity to be in line with the legislation, the criteria that they must be local suppliers is relevant but not overriding.

During each game, surveillance is carried out on the products, their quality, quantity and whether they comply with all the FC Porto guidelines. Surveillance is also carried out on waste. The sustainability programme document that they must follow is shared with the catering suppliers.

Mobility Management

There is no mobility manager at FC Porto. There are several departments responsible for mobility and access, dealing with how people will get to the stadium, how they will enter and how they will stay in the stadium. We talk about mobility, safety, security and services.

The operations department interacts with several city actors. Specifically, they work with the metro, the police, the fire brigade, and medical assistance.

In terms of mobility management during a football match, first of all they have the percentage of people who will arrive on foot, by car, by metro. Not specifically, they have an idea for example that 70 per cent of people will arrive from the north side of the stadium, 30 per cent from the south side of the stadium, knowing that when there are visiting fans, they usually arrive by metro because the meeting point is defined in the city centre. So, they have this information that is discussed with the visiting teams and then passed on to the police by UEFA, the Portuguese League, the Federation. They also have to be aware of how the fans will arrive, so they have connections with the airport, with the police at the airport, with the city hall when it comes to big matches.

The same survey carried out for the catering is submitted to all FC Porto supporters, but no information is collected on the mobility needs of the fans. In any case, if fans ask for information on where to stay or how to get around, this information is provided following best practice.

Regarding mobility, one of the main obstacles is cultural. The vast majority of people come by car because they don't live nearby. The use of public transport is usually recommended. Surely the metro should be favoured in some way as an alternative means to the car and walking should be encouraged. There is also parking for bicycles for fans. The use of alternative means of transport to the car must be emphasised and reinforced to make it a regular situation and to ensure that fans come in a different way.

There is currently no specific approach in terms of sustainability. In some situations, for example when it comes to big events, there is a different approach because all the actors around the event work in different places and collaborate with each other. On the other hand, when they talk about an FC Porto match, they don't have people arriving at the airport, for example. In international matches they contact the airport, the police, the authorities. to communicate information about when they will arrive, how they will get to the stadium and whether they will come directly to the stadium.

They do not intervene directly in the internal mobility of employees; the role is more related to human resources. In any case, there is always contact with human resources when there are situations that affect the mobility, sustainability, and safety of all employees. They are currently in the process of renewing the cars in the company fleet by switching to electric vehicles. There are no charging stations at the stadium but, in a few months, they will be installed.

There are electric bicycle stations around the stadium, although the management regarding this type of transport is changing. There is a bicycle parking area at the square near the stadium, but not many people come by bicycle considering the city's characteristics with many ups and downs.

The carbon footprint has been calculated with scope 3, so they know that the biggest impact is the mobility of fans, but - at the moment - they have no alternative solution.

Partner	FC Porto
Topic	Purchasing and Supplier selection
Interviewee	Susana Antunes
Position	Purchasing technician
Interviewers	Luca Marrucci, SSSA Rachele Stranieri, SSSA Daniele Casiddu, SSSA
Date	03/03/2023
Duration	1 hour

Roles and Responsibilities

Susan Antunes is a purchasing technician who has worked for FC PORTO for about 20 years. Susan works in the purchasing department with 2 colleagues for the 12 companies in the group. All purchasing is centralised in the purchasing department.

Her role is to manage the selection of external companies, suppliers and so on, she is in charge of the whole process.

Purchasing and Supplier selection

The process works via an internal app. The purchase request can come from any department and employee who submits it via the app. Before selecting a supplier, usually two or three other suppliers for the same product are consulted and then the best price has to be negotiated. All supplier information is provided via the app. The priority criteria when choosing suppliers are price and quality. Delivery times are also very important. The approval of the superior in the app is required before purchasing.

The app provides a list of suppliers used by FC Porto. In addition, the app is linked to the finance department. A supplier to be entered in the app must then be validated by the finance department. Once entered, a supplier profile is created. The app allows environmental criteria to be applied. For example, for cleaning products, a company with biodegradable products or environmental certifications can be selected. The environmental criteria may be different depending on the provider. For example, for the cleaning service for the biodegradable product, they usually require the company to be a local supplier.

The selection of suppliers on the basis of environmental criteria is mentioned in the sustainability strategy. The sustainability report monitors how many suppliers are selected according to ecological criteria and how many are local. This topic is discussed with the board. Regarding the selection of suppliers and the number of green criteria, data are available and KPIs are monitored. To date, no surveys have been carried out with suppliers. However, suppliers with a greater environmental impact are audited and they also have regular meetings to try to improve service and products.

An action plan is in place. Of course, environmental aspects also receive attention. Suppliers are involved, for example with regard to reusable cups, to implement this type of action.

Among the good practices implemented until three years ago were using plastic for choreography and now, in cooperation with the supplier, they no longer use plastic but paper boards, but always with a general image, e.g. the club logo or a dragon. Other initiatives include the use of reusable cups, maintenance of the football pitch and work on biodiversity.

There is no specific budget for the implementation of environmental aspects for each department. There are 12 companies and each company and department has a specific budget. There is an overall budget that you decide how to spend, but there are no internal limits.

Regarding training, Susan is undergoing specific training on guidelines for considering and implementing sustainability criteria in the supply chain.

On match day, there are dedicated people who check the suppliers to see if they are doing the right job. Especially with regard to the management of environmental aspects, waste management is the most important point, but also to check energy consumption, water consumption, whether they are acting in line with what FC Porto requires. In addition, two or three times a year they organise a meeting and training on waste management, cleaning service, catering, and pitch maintenance.

Regarding employee awareness, screen savers are used to spread the environmental message.

Commitment on the supply chain is not communicated, while on social media and in the sustainability report there is mostly information on energy consumption, water consumption and waste management, not too much on the supply chain.

Regarding contacts and collaborations with actors in the city, they are in contact with Lipor, which is the waste manager. Lipor is a supplier with whom they have talked a lot about green criteria. They do not define green criteria with the municipality, but they have signed the climate pact with them.

Local supplier spending accounts for 96 per cent of national supplier spending.

Partner	FC Porto
Topic	Accommodation
Interviewee	Paulo Fortunato
Position	Travel manager
Interviewers	Luca Marrucci, SSSA Rachele Stranieri, SSSA Daniele Casiddu, SSSA
Date	03/03/2023
Duration	1 hour

Roles and Responsibilities

Paulo Fortunato is FC Porto's travel manager. 12 years ago, FC Porto chose to create its own travel department, Dragon Tour, and the department consists of three employees. The travel department manages all the team's trips. Not only for the football team, but also for other competitions such as handball, basketball, hockey, swimming, and other sports. In the travel department, the 3 of them oversee managing accommodation decisions, in particular Paulo Fortunato is responsible for the football team 18.

Accommodation Management

They usually organise the trips of the teams, the board and sometimes also the sponsors. A hotel is chosen for the team, a hotel for the board and finally another hotel for the sponsors.

Regarding the criteria for selecting the hotel for the staff/players, a distinction is made between national or international travel. For transfers within Portugal, the same hotels with which FC Porto has long-standing relationships are usually chosen. For trips outside Portugal, the priority criterion for selecting a new hotel is the quality of services. The team is often consulted to gather information on experiences and possible hotel recommendations. Ecological criteria are not directly applied in the selection of hotels, although most of them have environmental certifications and implement practices in line with the principles of environmental sustainability.

There is no interaction with supporters who book flights and hotels independently. To date, there is no exchange of information to guide their choice towards accommodation facilities that meet environmental criteria. Providing this information on environmentally friendly hotels and sustainable ways of travelling for supporters is not one of the department's priorities because, at the moment, information is only requested and provided on meeting points and how to get to the stadium.

Relations with other clubs are not managed by FC Porto's travel department. Not directly by this department, some hotels are recommended to the clubs. But they do not know where the clubs are staying, and which hotels have been selected.

4.1.2 Conclusions and potential improvements

The interviewers concluded the following:

Accommodation management

No environmental criteria are currently considered in the selection of accommodation.

Even if not directly considered, the selected hotels usually implement environmental practices or have environmental certifications. Priority criteria are the quality of services and proximity to the stadium.

Mobility management

There is no mobility manager. There are several departments dealing with mobility, safety, security and services.

There is a productive dialogue with city actors for the management of supporters' mobility.

No surveys are submitted to supporters regarding their mobility needs.

Food and beverage

Both attendance and meals consumed per match are monitored.

Several contracts are currently in place with multiple suppliers of the catering service. Possibility to improve service with one contract.

Further initiatives implemented to reduce food waste, eliminate single-use plastic.

Monitoring of waste management related to the catering service.

In the F&B areas could be strengthen the presence of differentiated bins for waste collection and introduce special personnel for control, in order to minimize the need for subsequent checks and division of waste.

Waste management

Data are collected and KPIs on waste production are monitored.

Numerous initiatives are implemented to reduce and improve waste management.

An important collaboration has been implemented with the local waste manager, Lipor, with which FC Porto is confronted with a view to continuous improvement.

Continuous waste management training for employees.

Purchasing and Supplier Selection

Environmental criteria are considered when purchasing banners, so that they can be used for several events and for several years. The use of plastic choreographies is eliminated.

Use of an internal app for suppliers of products and services that allows them to apply environmental criteria.

Stadium infrastructural improvements and maintenance

The main environmental aspect connected to the infrastructure on which they have intervened is energy. There are KPIs monitoring of consumption with a view to continuous improvement.

Another aspect connected to buildings, new facilities and any aspect is biodiversity, where they have introduced legal compliance.

4.1.3 Circular City Committee outlooks

Accommodation management

Consider the possibility of integrating environmental criteria into the selection of hotels, although not as priority criteria.

Consider integrating green info sheets on accommodation of away fans. Benefits also in terms of reputation.

Exchanging information on green accommodation near the stadium with foreign Federations.

Mobility management

Consider implementing collaboration with city actors in order to improve the sustainable mobility of supporters.

Consider conducting a survey of home and away supporters to collect information on their needs about sustainable mobility.

Consider integrating eco-mobility information sheets for home and away supporters. For the latter, information could be shared with foreign federations to be passed on to their fans.

Food and beverage

Consider conducting supporter surveys to gather information on their menu preferences and to assess their awareness of food waste impacts.

Implement communication on the efforts and initiatives undertaken and the results obtained.

Waste management

Strengthen and enhance the excellent initiative already underway to collect unused food and donate it to several territorial entities, in order to minimize food waste.

Purchasing & Supplier Selection

Consider involving suppliers in awareness-raising initiatives on environmental sustainability.

Consider implementing communication on the activities undertaken and results achieved about the implementation of the green procurement chain, both on social media and on the website.

Stadium infrastructural improvements and maintenance

Support the reiterated desire to offset the own carbon emissions and establish partnerships with local realities able to lead and contribute to the initiative.

4.1.4 Applied KPI assessment

This tool was first applied through interviews with various FC Porto experts, divided by topic and, subsequently, to make the assessment even more concrete, a case study description approach was used. More precisely, the tool was applied with an on-site visit on DATA 2023, through an interview with two FC Porto's officers and an inspection at the Dragao stadium in Porto, where club plays its home matches. The results obtained for each section are shown below.

Accommodation: 40.82%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Do you take into account green criteria for the selection of accommodations for your staff/players during away matches/events?	A) We have developed an accommodation environmental policy with minimum environmental criteria to comply with, they are binding criteria, and we consider them in the ranking for the selection of the accommodations (must have) B) We have developed an accommodation environmental policy with minimum environmental criteria to comply with, but such criteria are not binding for the selection of accommodations (nice to have) C) We are currently discussing internally the green criteria for the selection of accommodations D) It has never been evaluated	C	0.33
Have you ever carried out on-site visits to evaluate the environmental management of the accommodation to be selected? (home and away matches/events)	A) Yes, at least once per year we perform environmental on-site audits according to the criteria we developed in our accommodation environmental policy B) We have defined an audit programme, but we have not yet started the on-site visits C) We are still discussing internally the possibility of carrying out on-site visits to evaluate accommodations D) It has never been evaluated	A	1
Have you ever assessed the relevance of your accommodation decisions in terms of environmental impact? (home and away matches/events)	A) We have considered them in evaluation metrics (such as LCA, carbon footprint, etc.) B) We are collecting data to assess accommodation's impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	C	0
Have your employees (staff/players) received information on green accommodations?	N. of employees (connected with Sustainability Department and Accommodation) who received information on green accommodations / Total N. of employees (connected with Sustainability Department and Accommodation)	0	0
Have you ever asked suggestions on sustainability requests by your staff/players about their accommodation needs?	A) We have carried out a survey to assess this aspect B) There are specific opportunities for staff/players to provide their feedback on green accommodations C) We are still discussing how collecting suggestions D) It has never been evaluated	A	1

Do you organize awareness raising actions on green accommodations targeting your fans?	A) We carried out at least one awareness raising events on green accommodation targeting fans B) We have already planned the event, but we have not yet carried out it C) We are still discussing internally the possibility of organising awareness raising actions on green accommodations D) It has never been evaluated	B	0.5
Do you adopt external communication towards fans to promote green accommodations during home/away matches?	A) We provide a list of ecolabel hotels together with the tickets B) We provide a list of ecolabel hotels in the city on the website C) It has never been evaluated	C	0
Do you interact with travel agencies to promote the use of green accommodations for fans during home/away matches?	A) We have set agreements with travel agencies to promote green accommodations B) We have already identified the travel agencies, but no agreement has been done C) We are identifying the travel agencies D) It has never been evaluated	A	1
Have you promoted initiatives with the municipality and other city actors to provide discounts for the selection of green accommodations by away-fans?	A) We have collaborated and promoted initiatives to provide sustainable hotels and discounts for fans B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal levels D) It has never been evaluated	C	0
Has the organisation put in place initiatives with the municipality and other main city actors to boost green practices adoption by accommodation owners?	A) We carried out at least one awareness raising event with main city actors on green accommodation targeting hotels and accommodation owners B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal levels D) It has never been evaluated	C	0
How do you monitor the outcomes of/ the improvements provided by your initiatives to boost green accommodations?	A) Feedbacks from accommodations we recommended B) Quantitative feedbacks from staff/players C) Qualitative feedbacks from staff/players D) It has never been evaluated	B	0.66

Regarding the “Accommodation” section, FC Porto registers a score of 40.82%, thanks to the fact that different initiatives are implemented.

In the context of the "Accommodation" sector, FC Porto has an assessment score of 40.82%, in fact they are currently discussing internally the drafting of green criteria for the selection of accommodation.

Currently, at least once a year, FC Porto organizes on-site visits to evaluate the environmental management of the accommodations to be selected and is evaluating to assess the relevance of its accommodation decisions in terms of environmental impact.

In addition to conducting surveys to collect suggestions on sustainability requests by its staff/players about their accommodation needs, FC Porto has already organized awareness raising actions on green accommodations targeting its fans, but it hasn't yet carried it out.

Although to date it has not adopted external communication towards fans to promote green accommodations during home/away matches, it interacts with travel agencies to promote the use of

green accommodation among fans and is internally discussing the possibility of promoting initiatives together with the municipality based on discounts for means of transport and to encourage the adoption of green practices by accommodation owners.

Food and beverage: 100%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is the aspect food & beverages and related environmental impacts mentioned in your sustainability strategy or environmental policy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Not at the moment, but we are implementing it for the next version C) No, we do not have a sustainability strategy	A	1
Do you keep track of data about the food & beverages activities (amount of food consumed in the VIP area, amount of food consumed in bar & kiosks, amount of beverage consumed, etc.)?	A) Yes, we have implemented a monitoring system and we have all data regarding food and beverages activities B) Yes, we have a monitoring system, but some data regarding food and beverages activities are still missing out C) We are working to develop a monitoring system which now is not in place (evidence must be shown) D) It has never been evaluated	A	1
Have you ever assessed the relevance of food and beverage originated by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint B) We are collecting data to assess accommodation's impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	A	1
Have your employees (staff/players) received information on food and beverages sustainability?	N. of employees trained on food and beverage sustainability /no. of match-day personnel dealing directly with food and beverage	100%	1
Do you use signage, communication channels or other approaches for highlighting more sustainable food and beverage options you may be offering?	A) Bar, kiosk, and catering services regularly highlight the more sustainable option B) There is only some generic info in the bar/kiosks/VIP area C) No signage, communication channels or other approaches	A	1
How frequently do you evaluate fans' awareness of the environmental impacts of food and beverages choices during matches?	A) We carried out a reliable survey at least one time per year B) We carried out a reliable survey at least one time every three years C) It has never been evaluated	A	1
Do you require environmental and sustainability-related criteria (such as the use of non-plastic cups, compostable objects etc.) in your call for offers and tenders when it comes to	A) We have developed a food and beverage minimum environmental criterion that contractors/suppliers must comply with (must have) B) We have developed a food and beverage minimum environmental criteria that contractors/suppliers are suggested to comply with (nice to have) C) We are working on such criteria D) It has never been evaluated	A	1

food and beverage activities?			
Have you implemented food and beverages sustainable improvement actions (compostable cutlery, reusable cups, vegetarian/vegan menus, refill stations, elimination of single use products, locally sourced food, etc.) for your matches/events?	A) We have implemented at least one sustainable action compared to the previous year/situation and we have already planned to implement another one in the next three year B) We have implemented one sustainable action compared to the previous year/situation C) We have not implemented any action, but we are working on it (evidence must be shown) D) It has never been evaluated	A	1
How much resources have you invested to achieve improvement actions in the field of sustainable food and beverages?	A) More than 10% increase of the economic/human resources foreseen for food and beverages B) Less than 10% increase of the economic/human resources foreseen for food and beverages C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	A	1
Have you ever involved your food & beverages contractors in environmental training (e.g., on how to manage waste produced in the kitchens)?	N° of food and beverages contractors trained in environmental topics / total N° of food and beverages contractors in all the events/matches in the year	100%	1
Has the organisation put in place collaborations with the municipality and other city actors, such as local suppliers, for the delivery of food and beverage in home matches/events?	A) There are set collaborations with the city actors to deliver local/environmentally friendly food and beverages B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1
Are you in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection)?	A) There are set agreements to discuss/coordinate actions to manage the waste produced by food and beverages activities and to improve waste collection B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1

The Food and Beverage sector is certainly the one that FC Porto manages in the most virtuous way, at least to date: in fact, the assessment score achieved is the maximum of 100%

This is because this aspect is mentioned in the club's sustainability strategy and for a series of good practices adopted, from monitoring data relating to food & beverage activities, to implementing LCAs to measure the relevance in terms of environmental impact of the food and beverage generated during its events.

In addition, all its employees receive information on sustainability in the area of food and beverage and bars, kiosks and catering services regularly highlight the more sustainable option. Fans' awareness of the environmental impacts of food and beverages choices during matches is also assessed through

surveys at least once a year and FC Porto requires environmental and sustainability-related criteria (such as the use of non-plastic cups, compostable objects etc.) in its call for offers and tenders when it comes to food and beverage activities.

All food and beverage contractors are also involved in environmental training activities.

The municipality is also involved together with other city actors in the delivery of food and beverage during the matches and agreements have been set to discuss/coordinate actions to manage the waste produced by food and beverages activities and to improve waste collection.

Mobility: 63.47%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Have you ever monitored the sustainability of fans mobility in home/away matches?	A) We have developed a system to track and monitor fans mobility B) We have identified the monitoring system, but we have not yet started tracking fans mobility C) We are still discussing this possibility at internal levels D) It has never been evaluated	A	1
If yes, what is the percentage of fans who use sustainable means of transport (e.g., bikes, public transport, walking, sharing, etc.) to reach the venue?	A) Over 75% of the fans use sustainable means of transport B) Over 50% of the fans use sustainable means of transport C) Over 25% of the fans use sustainable means of transport D) Less than 25% of the fans use sustainable means of transport E) It has never been evaluated	E	0
If yes, how frequently do you evaluate fans' mobility?	A) We carried out a reliable survey at least one time per year B) We carried out a reliable survey at least one time every three years C) It has never been evaluated	A	1
If yes, have you ever quantified the relevance of mobility originated by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment B) We carried out a carbon footprint + we collect quantitative environmental data C) It has never been evaluated	B	0.5
Have you ever received requests by your supporters about their mobility needs (e.g., official requests from supporters' club, email, oral requests, etc.)	A) There are specific opportunities for supporters to provide their feedback on green mobility B) We decided to give supporters the possibility to provide us suggestions, but we have not yet implemented a system C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1

What is the percentage of employees who use sustainable means of transport (e.g., bikes, public transport, walking, sharing, etc.) to reach the workplace?	A) Over 75% of the employees use sustainable means of transport B) Over 50% of the employees use sustainable means of transport C) Over 25% of the employees use sustainable means of transport D) Less than 25% of the employees use sustainable means of transport E) It has never been evaluated	B	0.75
How much resources have you invested to achieve improvement actions in the field of sustainable mobility of fans and employees?	A) More than 10% increase of the economic/human resources foreseen for green mobility B) Less than 10% increase of the economic/human resources foreseen for green mobility C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	B	0.66
Have your employees (staff/players) received awareness raising actions on green mobility?	N. of employees subjected to awareness raising action on green mobility/ Total N. of employees	0	0
Did your drivers received information on green mobility?	N. of drivers who received information on green mobility / Total N. of employees	70%	0.7
Do you organize awareness raising events on green mobility targeting your fans?	A) We carried out at least two awareness raising events on green mobility targeting fans B) We have already planned the event, but we have not yet carried out it C) We are still discussing internally the possibility of organising awareness raising actions on green mobility D) It has never been evaluated	B	0.5
Have you considered green criteria (Euro 6, methane, electric) in the selection of means of transportation for your players, staff, etc.?	A) Over 75% of the travels consider green criteria B) Over 50% of the travels consider green criteria C) Over 25% of the travels consider green criteria D) Less than 25% of the travels consider green criteria E) No green criteria are considered in the selection of the means of transportation	B	0.75
Do you have in place initiatives related to sustainable mobility of supporters with city actors (ticket of bus paid or discounted with ticket of match, free shuttles from train stations, increase number of trains etc.)?	A) We have developed such initiatives B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	C	0

Do you favour the use of bikes during match days, in collaboration with the municipality? (Such as by having a bike parking in the proximity of the stadium or a stadium achieved by bike lanes?)	A) We have set specific initiatives to favour the use of bikes during the matches in collaboration with the municipality B) We have set specific initiatives to favour the use of bikes during the matches (without the involvement of the municipality) C) We are still discussing internally this possibility D) It has never been evaluated	B	0.66
Do you have municipality electric bikes/bikes/push scooter sharing station close to the stadium?	A) Yes B) We have requested to the competent authorities to install them C) We are still in the planning phase D) No	A	1
Do you have electric cars recharging stations in the neighboring of the stadium?	A) Yes B) We have requested to the competent authorities to install them C) We are still in the planning phase D) No	A	1
Did you offset the carbon emission connected with mobility?	A) Yes, we offset all the carbon emission connected with green mobility B) Only partially C) No	C	0

The "Mobility" sector also recorded a virtuous assessment in terms of circularity: 63.47% is the score achieved.

From the annual monitoring of sustainability in the movements of fans, to carried out a carbon footprint and collect quantitative environmental data, FC Porto already demonstrates that it already has an excellent approach in the field of mobility, with over 50% of its employees using sustainable means of transport to get to the workplace.

Several awareness raising events targeting its fans are also planned and, in more than 50% of the trips of the FC Porto teams, green criteria are taken into consideration (Euro 6, methane, electric) in the selection of means of transportation for the players, staff.

Internally, the introduction of have in place initiatives related to sustainable mobility of supporters with city actors (ticket of bus paid or discounted with ticket of match, free shuttles from train stations, increase number of trains etc.) is being evaluated and specific initiatives have already been implemented to favour the use of bikes during the matches (without the involvement of the municipality), also thanks to the presence of municipality electric bikes/bikes/push scooter sharing stations and electric cars recharging stations close to the stadium.

Purchasing and supplier selection: 48.67%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is the aspect on sustainable procurement and a sustainable supply chain and related environmental impacts mentioned in your sustainability strategy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Yes, it is mentioned but it is not evaluated in detail C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability strategy	A	1
Do you take into account green criteria for purchasing and the selection of suppliers?	A) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, they are binding criteria and we consider them in purchasing and in the ranking for the selection of suppliers (must have) B) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, but such criteria are not binding for purchasing and the selection of suppliers (nice to have) C) We are working on it (evidence must be shown) D) It has never been evaluated	A	1
How many suppliers are covered with environmental certifications?	N. of suppliers (relevant from an environmental perspective) with at least an environmental certification (at organisational level)/ Total N. of suppliers	11%	0.11
How many fertilizers do you purchase are covered with environmental certifications?	% of organic fertilizers	100%	1
How many cleaning products do you purchase are covered with environmental certifications?	€ of purchased green cleaning products / Total € of purchased cleaning products	0%	0
Have you ever carried out on-site audits evaluating the suppliers' environmental management (against your sustainability criteria, in their facilities and during matches)?	N. of suppliers (relevant from an environmental perspective) audited (in their facilities, during matches, etc.)/ Total N. of suppliers	11%	0.11
Have you ever assessed the relevance of your suppliers in terms of environmental impact?	A) We have considered them in quantitative evaluation metrics (such as LCA) B) We are collecting data to assess suppliers' impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	A	1

Have you ever assessed the relevance of the products/materials you purchase in terms of environmental impact?	A) We have considered them in quantitative evaluation metrics (such as LCA) B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	C	0
Have you ever involved your suppliers in environmental and circular economy training with regard to their activities (e.g., on how to manage waste produced during events, etc.)?	N. of suppliers involved in environmental and circular economy training / Total N. of suppliers with relevant environmental impacts	35%	0.35
Have you ever received sustainability requests by your staff/players about their purchasing and suppliers needs?	A) We are receiving suggestions from staff/players on green purchasing and suppliers' selection B) We have created a specific channel (green whistleblowing) to give staff/players the possibility to provide suggestions, but it has never been used C) We are still internally discussing this possibility D) It has never been evaluated	B	0.5
How much resources have you invested to achieve improvement actions in the field of sustainable and circular purchasing and supplier selection?	A) More than 10% increase of the economic/human resources foreseen for sustainable and circular purchasing and supplier selection B) Less than 10% increase of the economic/human resources foreseen for sustainable and circular purchasing and supplier selection C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	B	0.66
Do you have a list of local suppliers?	A) Yes, we defined a list of local suppliers B) We are currently collecting information to create the list of local suppliers C) We are still internally discussing this possibility D) It has never been evaluated	A	1
Do you purchase locally (products/materials produced in the same region where it is needed)?	nr. of local suppliers / total nr. of suppliers (Food & Beverages excluded)	11%	0.11

The assessment result achieved in the "Purchasing and Suppliers selection" sector is 48.67%, also thanks to the fact that this aspect is an integral part of the sustainability strategy. It has developed a purchasing and supplier environmental policy with minimum environmental criteria that are considered in purchasing and in the ranking for the selection of suppliers.

Even if not all suppliers are covered with environmental certifications, all fertilizers used are and through quantitative evaluation metrics (such as LCA), FC Porto assessed the relevance of its suppliers in terms of environmental impact, while assessments related to products/materials are under internal discussion.

Furthermore, a specific channel (green whistleblowing) was created to give staff/players the possibility to provide suggestions, which is currently little used. Finally, the fact that a list of local suppliers has been defined demonstrates how FC Porto wants to increasingly strengthen its path towards sustainability.

Waste management: 81.54%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is waste management mentioned in your sustainability strategy/policy?	A) Yes, it is mentioned and evaluated in quantitative terms B) Yes, it is mentioned and evaluated in qualitative terms C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability/policy strategy	A	1
When establishing your waste management goals, do you take into account the policy priorities of your city?	A) Yes, we have discussed and shared the objectives with representatives of the municipality B) Yes, we are aware of the municipality's waste goals because we consult their waste policy documents C) Yes, but without careful verification D) No	B	0.66
If you have a policy, how much of your waste management objectives reflect the targets of your local/regional authority? (waste prevention, increasing overall recycling rates, elimination of certain items or material, landfill diversion targets, separate waste collection rates, carbon targets, reduction of food waste)	% of objectives consistent with the city's priorities	11%	0.11
How often are you in contact with your relevant local/regional waste authorities for understanding the new priorities and targets?	A) At least once every year B) Periodically, but without a defined timeframe C) We are not in contact with such authorities	A	1
Do you keep track of data about waste management (amount of waste produced in the stadium/event, percentage of recovery/recycling/landfill according to waste management indicators of your city/region, etc.), through a system of performance indicators?	A) Yes, we have implemented a monitoring system and we have all data regarding waste B) Yes, we have a monitoring system, but some data regarding waste are still missing out C) We are working to develop a monitoring system which now is not in place (evidence must be shown) D) It has never been evaluated	A	1
Has the organisation clearly defined which actors (the organisation itself, the suppliers, the municipality, the waste management operator, etc.) are in charge of waste collection during matches/sport events (inside/outside the stadium)?	A) All situations are clearly identified by the organisation in advanced and the actors in charge appointed without any issue B) All situations are clearly identified, but sometimes there is uncertainty on who should be in charge of waste	A	1

	management and misalignment might happen C) It has never been evaluated by the organisation, since other actors take care of waste management		
Do you carry out during the match some on-site visits around and inside the stadium in order to understand issues related to waste management? For example: need of bins (in case of separate waste collection, etc.)?	n. of matches/sport events where waste management is checked through on-site visits / n. of matches/sport events	100%	1
Have you ever assessed the relevance of the waste produced by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint considering waste data B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	A	1
Have your employees (staff/players) received information on waste management?	N. of employees subjected to awareness raising action on waste management / Total N. of employees	0	0
Have your employees (who work directly with waste) received information on waste management?	N. of employees who work directly with waste trained on waste management / Total N. of employees who work directly with waste	50%	0.5
How many awareness raising activities/events on waste management environmental impacts targeting your fans have you organized?	A) At two least two awareness raising activities B) One awareness raising activity C) No awareness raising activities	A	1
How frequently do you evaluate fans' awareness of the environmental impacts of waste management choices during your matches?	A) We carried out a reliable survey at least one time per year B) We carried out a reliable survey at least one time every three years C) It has never been evaluated	A	1
Have you implemented waste management improvement actions (waste collection signals, separate collection, take-back systems, etc.) for your matches/events?	A) We have implemented at least two sustainable actions compared to the previous year/situation B) We have implemented one sustainable action compared to the previous year/situation C) We have not implemented any action, but we are working on it (evidence must be shown) D) It has never been evaluated	C	0.33
Do you donate the leftover food to local city actors (e.g., caritas, parishes, etc.)?	<i>Nr. of matches with food donation / Total nr. of matches</i>	Not Available	
If you do not donate the leftover food, does the organic waste go to composting facilities inside the city?	A) Organic waste are composted inside the stadium facility B) Organic waste goes to composting facilities within the city C) Organic waste goes to composting facilities outside the city D) We have unsorted collection/we do not know	Not Available	

<p>Are you in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection)?</p>	<p>A) There are set agreements to discuss/coordinate actions to manage the waste produced outside the stadium and to improve waste collection B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated</p>	<p>A</p>	<p>1</p>
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The Waste Management sector also plays a decisive role in the final assessment achieved by the circularity measurement tool: the assessment score in this sector is 81.54%.

This aspect is mentioned in the sustainability strategy and FC Porto is aware of the municipality's waste goals because it consults their waste policy documents and takes them into account in setting its objectives.

Furthermore, FC Porto have implemented a monitoring system to keep track of data about waste management (amount of waste produced in the stadium/event, percentage of recovery/recycling/landfill according to waste management indicators of the city/region, etc.), through a system of performance indicators and all situations are clearly identified by the organization in advanced, in addition to the fact that the actors in charge of waste collection during matches/sport events are appointed without any issue.

During each match there are on-site visits around and inside the stadium in order to understand issues related to waste management and FC Porto performed a Life Cycle Assessment/carbon footprint considering waste data to assess the relevance of the waste produced by its matches/events in terms of environmental impact.

This commitment would also like to be suggested to its fans, as demonstrated by the at least two awareness raising activities that are personally conducted by FC Porto every year.

As for waste management improvement actions (waste collection signals, separate collection, take-back systems, etc.) for their matches/events, they have not implemented any action, but they are working on it and evidence will soon be shown.

The donation of residual food and the destination of composting facilities inside the city in the event of impossibility of donation are another path to explore to join the already numerous initiatives in this direction, such as staying in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection).

Stadium infrastructural improvements: 74.40%

INDICATOR	Formula/answers	Result	KPIs RESULTS
<p>Are sport facilities and stadium infrastructures (Please see Stadium infrastructures guidelines of UEFA for a definition) mentioned in your sustainability strategy/policy?</p>	<p>A) Yes, they are mentioned and evaluated in quantitative terms B) Yes, they are mentioned and evaluated in qualitative terms C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability/policy strategy</p>	<p>A</p>	<p>1</p>

When establishing your stadium infrastructure goals, do you take into account the policy priorities of your city?	A) Yes, we have discussed and shared the objectives with representatives of the municipality B) Yes, we are aware of the municipality's waste goals because we consult their waste policy documents C) Yes, but without careful verification D) No	Not Available	
If you have a policy, how much of your stadium infrastructures objectives reflect the targets of your local/regional authority?	% of objectives consistent with the city's priorities	33%	0.33
How often are you in contact with your relevant local/regional authorities for understanding the new priorities and targets related to stadium infrastructure and sport facilities?	A) At least once every year B) Periodically, but without a defined timeframe C) We are not in contact with such authorities	A	1
Do you have a maintenance management system for infrastructural improvement interventions with regard to sustainability?	A) Yes, we have implemented a maintenance management system, with KPIs, and we set sustainability criteria and objectives B) Yes, we have a maintenance management system, but without clear and defined sustainability criteria, KPIs and objectives C) it has never been evaluated	A	1
In case of new building or infrastructures, have you defined sustainability criteria and objectives to integrate in their design (eco-design) and development?	A) Yes, we have set clear sustainability criteria and objectives, which are mandatory (must have) B) Yes, we have set clear sustainability criteria and objectives, but they are not mandatory (nice to have) C) it has never been evaluated	A	1
Have you ever assessed the relevance of the stadium infrastructures and sport facilities in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint (or similar quantitative metrics) B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	A	1
Have your employees (staff/players/coaches) received information on sustainable management of stadium infrastructures and sport facilities?	N. of employees trained on sustainable management of stadium infrastructure and sport facilities / Total N. of employees who work on stadium infrastructure	11%	0.11
How many awareness raising activities/events on stadium infrastructures and sport facilities environmental impacts targeting your staff (employees, players, coaches, etc.) have you organized?	A) At two least two awareness raising activities B) One awareness raising activity C) No awareness raising activities	A	1

In case of ownership of the stadium by a city actor (e.g., municipality), have you set and implemented with the actor sustainability improvement actions regarding the stadium infrastructure?	A) There are set and joint agreements with the city actor to improve the sustainability of the stadium infrastructure B) We are currently working on it (evidence must be shown) C) It has never been evaluated	Not Available	
Even if you are the owner of the stadium, have you set and implemented with the city actors (i.e., municipality) sustainability improvement actions regarding the stadium infrastructure?	A) There are set agreements with the city actors to improve the sustainability of the stadium infrastructure B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1
Have you ever offset your carbon emissions linked with the use of sport facilities and stadium infrastructures?	% of offset carbon emissions connected with sport facilities and stadium infrastructures	0%	0

The “Stadium Infrastructural Improvements” sector records a score of 74.40%.

This is the result of a virtuous approach according to which this issue is a central part of FC Porto's sustainability strategy.

At least once a year, FC Porto is in contact with the relevant local/regional authorities to understand the new priorities and objectives related to stadium infrastructure and sports facilities. It has also implemented a maintenance management system for infrastructural improvement interventions, with KPIs, and has set sustainability criteria and objectives.

In the case of new buildings, a series of sustainability criteria have been defined to be associated with the construction ones.

At least two awareness-raising activities are organized every year to be disseminated to employees and the relevance of sports infrastructures in terms of environmental impact is also measured through the LCA: this could lead, in future programs, to evaluating the possibility of offsetting the emissions linked with the use of sports facilities and stadium infrastructure, to make the approach to the "Stadium infrastructural improvements" issue even more circular.

4.1.5 Overall results

Following the presentation of the results, a proactive conduct by Porto FC in terms of circularity is highlighted. The circularity performances are represented both through a speedometer, which serves to present the overall performances, and through a target graph, which serves to represent the performances for each phase.

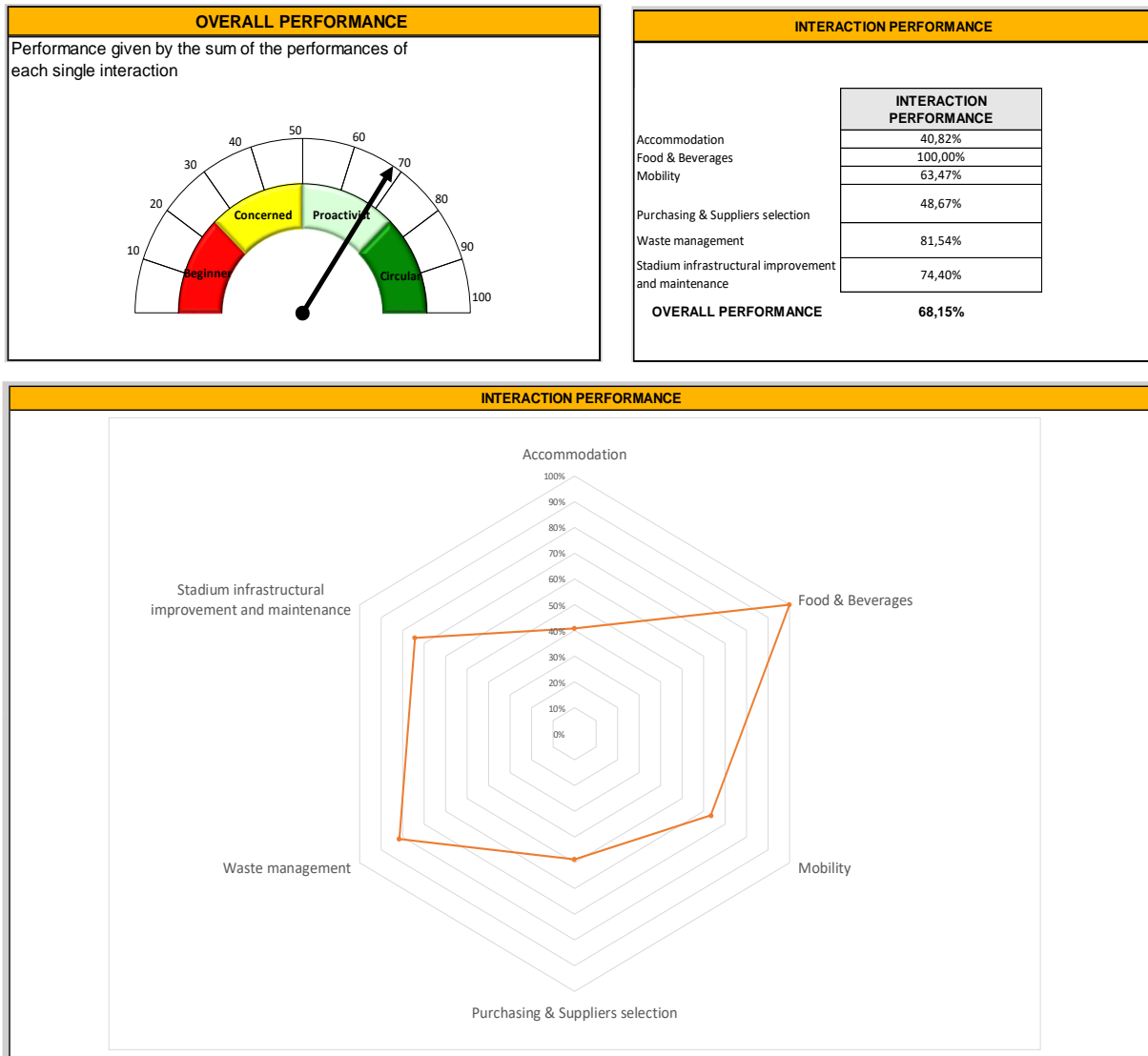


Figure 1 - The graphical results emerging from the application of the tool

The overall performance was 68.15%, reiterating how - already today - Porto FC has an excellent approach in terms of circularity.

In detail, this score is the result of the performance measured for each interaction evaluated in this tool. The management of the Food & Beverage area should be noted, which saw Porto achieve the maximum score, significantly directing the trend of the overall performance.

The analysis of the interactions in the "Waste management" area proved to be a further positive note, with a score of 81.54%, followed by "Stadium infrastructural improvement and maintenance" with a score of 74.40% and "Mobility" with a score of 63.47%.

Ample room for improvement can be found in the sections "Accommodation" (40.82%) and "Purchasing & Suppliers events" (48.67%) which would allow the organisation to get even closer to an all-round circular performance!

It should be remembered that, at the basis of the process of analyzing the company's circular economy performance, there is the ability of the sports organizations and local realities involved to monitor their own actions. Although, as already mentioned, there is a good basis from this point of view, there are still some areas for improvement in terms of availability of the data necessary for the correct and complete compilation of the tool.

For this reason, the first recommendation emerging from the application of the tool concerns the ability to quantitatively monitor the company activities connected with the indicators included in the tool in order to have a more complete assessment during future assessments or future implementations.

The following table summarizes in detail for each phase the number of indicators for which it was not possible to carry out an evaluation.

Interaction	Indicators not calculated due to unavailability of values
Accommodation	/
Food & Beverage	/
Mobility	/
Purchasing & Suppliers selection	/
Waste Management	/
Stadium Infrastructural improvement and maintenance	2

FC Porto commitment is further reaffirmed by the [agreement signed](#) with the municipality: the [Porto climate pact](#).

The future strategy of FC Porto on the theme of circularity can have - from now on - a dual purpose. On the one hand, continue to populate the set of indicators by reducing the number of indicators that cannot be calculated due to lack of data. On the other hand, start activating targeted actions aimed at increasing the performance of each individual indicator that can already be calculated to stabilize its overall performance in the "circular" category, with an average performance of over 75% in any section.

Interaction	Possible improvements
Accommodation	Consider the possibility of integrating environmental criteria into the selection of hotels, although not as priority criteria.
	Consider integrating green info sheets on accommodation of away fans. Benefits also in terms of reputation.
	Exchanging information on green accommodation near the stadium with foreign Federations.
Food & Beverage	Consider conducting supporter surveys to gather information on their menu preferences and to assess their awareness of food waste impacts.
	Implement communication on the efforts and initiatives undertaken and the results obtained.
Mobility	Consider conducting supporter surveys to gather information on their menu preferences and to assess their awareness of food waste impacts.
	Implement communication on the efforts and initiatives undertaken and the results obtained.
	Consider conducting supporter surveys to gather information on their menu preferences and to assess their awareness of food waste impacts.
	Consider involving suppliers in awareness-raising initiatives on environmental sustainability.

Purchasing & Suppliers selection	Consider implementing communication on the activities undertaken and results achieved about the implementation of the green procurement chain, both on social media and on the website.
Waste Management	Strengthen and enhance the excellent initiative already underway to collect unused food and donate it to several territorial entities, in order to minimize food waste
Stadium Infrastructural improvement and maintenance	Support the reiterated desire to offset the own carbon emissions and establish partnerships with local realities able to lead and contribute to the initiative.

4.2 FOOTBALL ASSOCIATION OF DENMARK

4.2.1 Interview reports

Partner	DBU
Topic	Mobility & Accommodation
Interviewee	Diana Hjorth
Position	Travel Agent
Interviewer	Tiberio Daddi, SSSA Rachele Stranieri, SSSA Daniele Casiddu, SSSA
Date	26/01/2023
Duration	1 hour

Roles and Responsibilities

Diana Hjorth is a travel agent that has been working for DBU for 15 years.

This is the first time that sustainability has been mentioned in connection with her work assignments: she is in charge of the travel organisation of all Danish national football teams. There are sixteen national teams in total, including youth and A team, women and men, futsal, and e-sport.

The travel department in DBU consists of 2 employees and many years ago, DBU chose to have their own travel department that books everything.

Accommodation and mobility management

Accommodation Management

The number of people to arrange for when the national teams play away is different and can be divided into three primary categories. For example:

- ⚙️ for the youth-team matches, there are involved about 30 people, 22 players plus administrative staff;
- ⚙️ for the national Women A-Team, approximately 40 people; 22 players plus administrative staff;

- ☀ for the national Men A-Team, approximately 55 people; 22 players plus football politicians and administrative staff.

The youth teams often participate in European tournaments and could be away for a whole week; the A-teams, every time they travel, do it for a maximum of 2 days besides the bigger tournaments like the World Cup and European Cup.

Often, when players and staff have to travel, the host country's FA suggest or find (or at least suggest) an accommodation for the Danish representatives.

Meals are provided by the hotels where they live, which reduces the need for players to relocate.

The travel department often has the freedom to decide, and the principal criteria is price, as it can't be too expensive (especially for the youth teams, where there is a limited travel budget). DBU looks at different criteria in terms of the hotel (if they have the adequate meeting rooms, if they already have experience hosting other sports teams, location of the hotel in regards of training pitches and stadium for match day, if they can provide the healthy food the players need). At least 3-4 alternatives are identified, then the team manager inspects every selected proposition and make the final choose. At the moment, criteria related to the aspect of environmental sustainability are not taken into account.

DBU first considers what is best for the team in order to reach the best results possible on the pitch. Including green criteria to economic and comfort criteria could be a positive opportunity, but until today it is something that the management board has never asked the travel department to consider. In the next months, DBU will try to work on these topics but in the end, it depends on what top management addresses.

During overnight stays, shared rooms are used only for the youth teams, the A-teams use single rooms. This possible approach could also be used for the staff's accommodation.

If I don't know which hotel to choose in a certain place, we ask to the local FA for suggestions. We are in direct contact with the hotels.

The DBU training centre and camp in Helsingør have an agreement to use Marienlyst Strandhotel. The team and staff meet up a few days when playing a game at home.

Mobility Management

Each team is normally involved in 10 annual national matches. To participate in the various competitions, each team travels approximately from 4 to 5 times a year.

Concerning the A-Teams, such trips include an away accommodation period of 2 nights, sometimes even 3 days. Home matches take place in Denmark.

Regarding transport, the guiding principles is the minimum time required: for example, when teams must play in a neighbourhood country like Sweden, they take a bus for 5 hours; but for longer distances, the bus doesn't represent the most comfortable solution. It depends on the travelling time: for this reason, 90-95% of times DBU choose flights because, otherwise, the travelling time is too long.

The choice of transportation varies according to the representatives involved.

For example, DBU only selects commercial flights for youth teams. Only the A-Team for men sometimes flies charter flights, as does the A-Team for women.

DBU does not require green criteria or policies for suppliers.

Multi-year trade agreements are signed, but -to date- they are not based on any green policy.

As with the choice of accommodation, also for the mobility of its representatives, the DBU first considers what is best for the team, to achieve results.

Partner	DBU
Topic	Food and Beverage, Purchasing & Supplier Selection, Waste Management
Interviewee	Mads Damsgaard
Position	Event manager
Interviewer	Tiberio Daddi, SSSA Rachele Stranieri, SSSA
Date	26/01/2023
Duration	1 hour

Roles and Responsibilities

Mads Damsgaard has worked for DBU for seven years. He started as the events coordinator and is now the commercial manager of the fan events and fan zone. His area of responsibility covers indoor events at the stadium as well as smaller outdoor events with just over 100 people, for example an autograph and photo session with 100 fans and two players. In managing fan zone activities and fan relations, he is responsible for supplier relations for both catering and other procurements. He is also responsible for managing supporter's choreography.

The Fans and Events Department of the DBU consists of 3 employees.

Food and beverage, purchasing and supplier selection, waste management

To manage the fans zone, meetings are usually held with the club that owns the stadium. Ideas are shared, but the final decision on the management of the stadium organisation lies with the owner club and the management of the fan zone with DBU.

Concerning relations with home and away fans, currently no information is provided on sustainable mobility options and environmentally sustainable accommodation near the stadium. The integration of this information for home and away fans should be evaluated.

Food and Beverage

DBU monitors both attendance and the meals sold in the fan zone. On average, about 2,300 meals are sold per match and twice a year there are about 600 VIPs in the fan zone who each consume a meal.

Regarding food and beverage management in the fan zone, priorities identified based on fan demand focus primarily on price, quality, and large portions, not on environmental aspects.

No surveys have been administered to fans to understand their knowledge regarding the environmental impact of food choices during a match yet, and no carbon footprints or environmental footprints of food and beverage activities during matches have been conducted.

Over the years, various initiatives have been implemented to reduce the environmental impact of food and drink. Vegetarian menus were included in the meal offerings but had little success and were therefore not reintroduced. Initiatives to reduce the use of plastic were also implemented, in particular, the use of re-usable cups.

Regarding the issue of food leftovers in the fans zone, the kiosks do not donate the leftover food as it is reused at other festivals or events in the following days. The management by the food suppliers in the stadium is different as the Too Good To Go app is used for leftover food.

Purchasing and Supplier selection

Regarding relations with suppliers, the DBU Fans and Events Department is exclusively responsible for relationships with suppliers of food and beverages and other products for the fan zone and fan events. Suppliers of meals are usually selected from local suppliers. The club owning the stadium is responsible for the selection of suppliers in the stadium. In any case, the priority criteria for food and beverages are price, quantity and quality.

Regarding purchases, a significant amount of plastic flags used for fan choreographies are purchased. The interviewee could not confirm at the time whether these were recycled plastic flags. It is important to apply environmental criteria in the selection of this type of purchase, as these are large quantities of usually single-use products. Between 10,000 and 20,000 plastic flags are purchased for fan choreographies when matches are sold out. At the end of the match, they are taken away by the fans or left in the stadium to be collected separately with the plastic waste.

In contrast, environmental criteria are applied to the banners used during matches or fan events. Indeed, these are general DBU banners that do not refer to a specific event or match. This allows them to be reused several times, until they have to be thrown away because they are worn out, usually after 2-3 years.

Waste Management

Regarding the management of waste produced in the fan zone, there is a separate collection, but the monitoring system needs to be implemented. Concerning the issue of leftover food in the fan zone, the kiosks do not donate the leftover food because it is reused at other festivals or events in the following days. The handling by the food vendors in the stadium is different, as the Too Good To Go app is used for leftover food.

DBU is working with the municipality to improve waste management. One example is the discussion on the usefulness of using reusable cups during short-term events such as a football match. Over the years, initiatives have been implemented to reduce the use of plastic. These include, in particular, the use of reusable cups. Considering the low cost of reusable cups compared to the cost of beer, these cups are usually thrown away after only one use and are not reused or returned. Approximately 1,000 reusable cups are lost per match. For this reason, the initiative was discussed internally and the problem was also presented to the municipality.

Partner	DBU
Topic	Infrastructural improvement
Interviewee	Nick Madsen
Position	Stadium Manager
Interviewers	Daniele Casiddu, SSSA Luca Marrucci, SSSA Rachele Stranieri, SSSA
Date	02/02/2023
Duration	1 hour

Roles and Responsibilities

Nick Madsen is the central part of a match elaboration, the main responsible for the home match of A-teams.

He has been working at DBU for 12 years, and in the last 7 years he has been involved in the National Representatives matches.

Stadium infrastructural improvements and maintenance

Stadium Infrastructural Improvements and Maintenance

The DBU owns just the Federations Headquarters in Copenhagen and counts 50-60 employees. In HQ there is a not full-sized artificial pitch, it is used for some coaches training and by the under 14-15 team players.

The men's National Team trains in Helsingør 45 minutes from Copenhagen, in a camp complex where there is a hotel and some training pitches.

Whilst the training centre is in a rural area, all the men's A-team matches are played in the National Stadium in Copenhagen and all the arrangements and facilities are owned by F.C. Copenhagen. DBU rents the stadium on a long-term contract owned by F.C. Copenhagen.

The operation and maintenance costs for the training centre is borne by the municipality and for the stadium borne by the club that owns the stadium.

Women teams, instead, play in a stadium in the West part of the country.

Only the men's youths team plays in different stadiums owned by different municipalities all around the country, especially friendly matches could take place in another cities.

One of the main criteria for the selection of the stadium is the expected seating capacity, 8-12K for the women's team.

The contract duration – often multi-years agreement - with the stadium owners could be different: 4-5 years for the men A-teams and 1-3 years for women teams. DBU pays a financial contribute - on a yearly basis - to the owner.

DBU is looking to a solution for the stadium: they want to invest in more modern facilities, maybe start funding a new training centre and federation headquarter together, where all the teams can train.

Historically DBU has never considered environmental aspects in stadium contracts, but in the work, they are doing now with Parken Stadium, where they are looking to enter into a much larger agreement for five to eight years, improving some environmental aspects of the stadium has been part of the discussions. The club owner of the stadium has the same agenda, and they want to start being much more environmentally friendly. So, they have started a mutual dialogue with some partners to figure out how to take action to be more environmentally friendly. Carlsberg is the main sponsor of both the federation and the club and is very committed to environmental issues. For example, they want to implement the use of reusable cups. They also want to change all the seats in the stadium, which are quite old, and are considering whether it is possible to make them from old plastic cups used in the stadium. Everyone is trying to find more sustainable solutions.

Last year, with an external consultant, together with Carlsberg, DBU has started a project to understand what could be improved on the environmental management, what could impact, and it could be mitigated. Now it is in a sort of pilot phase. Whenever they have to renovate, they also think about how to improve the environmental impact. Recently they renovated the pitch. They've been thinking about how to reuse rainwater in the irrigation system on the field.

DBU has never communicated it externally, nor involved other partners, but feels that there is a good possibility to contribute to an environmental-friendly culture.

About the staff training, they have the perspective that training them could be interesting in terms of a sustainable development.

One of the best practices Nick has found on the Stadiums (Brøndby) that DBU uses, regards pitch artificial lighting with a Second-Sun technology. The mirrors reflect natural sun lights to increase the light in areas of the pitch with most shadow.

For the stadium owned by the municipality, they make some investments concerning the environmental impact, they are addressing any field towards hybrid grass solutions for pitches, that demands less maintenance and resources waste.

4.2.2 Conclusions and potential improvements

The interviewers concluded the following:

Accommodation management

- ⚙️ The management of accommodation for players is predominantly oriented toward fostering the best performance of the team, the well-being of the players, and secondly, economic criteria are taken into account.
- ⚙️ No environmental criteria are currently considered in the selection of accommodation.

Mobility management

- ⚙️ No environmental criteria are currently applied in the organisation of team and staff travel.
- ⚙️ The application of environmental criteria in the organisation of team travel and the search for the best solution for the welfare of the team are not in conflict.

Food and beverage

- ⚙️ The monitored aspects at the DBU fan zone are attendance and meals consumed per match.
- ⚙️ The priorities in food and beverage management in the fan zone concern the price, quantity and quality of food.
- ⚙️ Environmental criteria are not formally considered for the management of catering in the fan zone and at fan events, although some issues have been analysed. In the past, attempts have been made to offer different types of meals (vegetarian/vegan menus), but these have not been successful at these sports events.
- ⚙️ Initiatives focused on reducing the amount of waste produced by using reusable cups.

Waste management

- ⚙️ DBU discusses waste management issues with the municipality.
- ⚙️ There is already data on the management of food and beverages in the fan zone, the monitoring of waste has to be improved.

Purchasing & Supplier Selection

- ⚙️ Most of the food and beverage suppliers in the fan zone are selected from local suppliers.
- ⚙️ Environmental criteria are taken into account when purchasing banners so that they can be used for several events and several years.
- ⚙️ Large quantities of plastic flags used for fan choreography are purchased. It is important to assess the type of material from they are made of.

Stadium infrastructural improvements and maintenance

- ⚙️ The infrastructure department has recently begun, at the urging of a sponsor such as Carlsberg, to consider environmental aspects in stadium management.
- ⚙️ In any case, suggestions on possible good practices to implement were welcomed by all department heads interviewed.

4.2.3 Circular City Committee outlooks

Accommodation management

- ⚙️ Consider the possibility of integrating environmental criteria into the selection of hotels, although not as priority criteria.
- ⚙️ Consider integrating green info sheets on accommodation of away fans. Benefits also in terms of reputation.
- ⚙️ Exchanging information on green certified accommodation near the stadium with foreign Federations.

Mobility management

- ⚙️ Consider the possibility of integrating environmental criteria into the selection of bus suppliers for team travel.
- ⚙️ Consider integrating eco-mobility information sheets for home fans into the traditional matchday information. Also benefit from a reputational point of view.
- ⚙️ Consider providing information on sustainable mobility for away supporters. Information that could be shared with foreign Federations to be passed on to their supporters.

Food and beverage

- ⚙️ Consider carrying out fan surveys to investigate their awareness of the environmental impact of food during a match and, based on the results, set up a communication/awareness-raising campaign.
- ⚙️ Consider increasing the price of reusable cups so that people have the incentive to reuse them.

Waste management

- ⚙️ Improve the monitoring of the quality and type of waste collected in the fan zone.
- ⚙️ Carry out communications to fans aimed at improving the quality of waste collected in the fan zone.

Purchasing & Supplier Selection

- ⚙️ Purchasing flags used for supporters' choreographies made of recycled plastic.
- ⚙️ Consider involving suppliers of food and other products used in the fan zone in environmental sustainability awareness raising initiatives.

Stadium infrastructural improvements and maintenance

- ⚙️ The Danish Football Federation can benefit from the collaboration of an environmentally aware sponsor such as Carlsberg.
- ⚙️ Based on the interview, it notes the possibility of carrying out training activities for staff to accompany them in bringing the sustainability dimension into their daily work activities.

4.2.4 Applied KPI Assessment

This tool was first applied through interviews with various DBU experts, divided by topic and, subsequently, to make the assessment even more concrete, a case study description approach was used. More precisely, the tool was applied with an on-site visit on 11 May 2023, through an interview with 2 DBU officers and an inspection at the Parken stadium in Copenhagen, where the Danish men's football team and the local club FC Copenhagen play their home matches. The results obtained for each section are shown below.

Accommodation: 13.55%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Do you take into account green criteria for the selection of accommodations for your staff/players during away matches/events?	A) We have developed an accommodation environmental policy with minimum environmental criteria to comply with, they are binding criteria, and we consider them in the ranking for the selection of the accommodations (must have) B) We have developed an accommodation environmental policy with minimum environmental criteria to comply with, but such criteria are not binding for the selection of accommodations (nice to have) C) We are currently discussing internally the green criteria for the selection of accommodations D) It has never been evaluated	C	0.33
Have you ever carried out on-site visits to evaluate the environmental management of the accommodations to be selected? (home and away matches/events)	A) Yes, at least once per year we perform environmental on-site audits according to the criteria we developed in our accommodation environmental policy B) We have defined an audit programme, but we have not yet started the on-site visits C) We are still discussing internally the possibility of carrying out on-site visits to evaluate accommodations D) It has never been evaluated	D	0
Have you ever assessed the relevance of your accommodation decisions in terms of environmental impact? (home and away matches/events)	A) We have considered them in evaluation metrics (such as LCA, carbon footprint, etc.) B) We are collecting data to assess accommodation's impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	D	0
Have your employees (staff/players) received information on green accommodations?	N. of employees (connected with Sustainability Department and Accommodation) who received information on green accommodations / Total N. of employees (connected with Sustainability Department and Accommodation)	0	0
Have you ever asked suggestions on sustainability requests by your staff/players about their accommodation needs?	A) We have carried out a survey to assess this aspect B) There are specific opportunities for staff/players to provide their feedback on green accommodations C) We are still discussing how collecting suggestions D) It has never been evaluated	D	0
Do you organise awareness raising actions on green accommodations targeting your fans?	A) We carried out at least one awareness raising events on green accommodation targeting fans B) We have already planned the event, but we have not yet carried out it C) We are still discussing internally the possibility of organising awareness raising actions on green accommodations	C	0

INDICATOR	Formula/answers	Result	KPIs RESULTS
	D) It has never been evaluated		
Do you adopt external communication towards fans / GUEST FEDERATIONS to promote green accommodations during home/away matches?	A) We provide a list of ecolabel hotels together with the tickets B) We provide a list of ecolabel hotels in the city on the website C) It has never been evaluated	B	0.5
Do you interact with travel agencies to promote the use of green accommodations for fans during home/away matches?	A) We have set agreements with travel agencies to promote green accommodations B) We have already identified the travel agencies, but no agreement has been done C) We are identifying the travel agencies D) It has never been evaluated	D	0
Have you promoted initiatives with the municipality and other city actors to provide discounts for the selection of green accommodations by away-fans?	A) We have collaborated and promoted initiatives to provide sustainable hotels and discounts for fans B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal levels D) It has never been evaluated	D	0
Has the organisation put in place initiatives with the municipality and other main city actors to boost green practices adoption by accommodation owners?	A) We carried out at least one awareness raising event with main city actors on green accommodation targeting hotels and accommodation owners B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal levels D) It has never been evaluated		0
How do you monitor the outcomes of/ the improvements provided by your initiatives to boost green accommodations?	A) Feedbacks from accommodations we recommended B) Quantitative feedbacks from staff/players C) Qualitative feedbacks from staff/players D) It has never been evaluated	B	0.66

As regards the mobility of its national teams to go and play matches, the DBU is internally discussing the possibility of introducing green criteria to choose the most suitable mode of transport and organizing awareness raising events on green accommodations targeting the fans.

DBU also already adopts external communication towards fans / guest federations to promote green accommodations during home/away matches, providing a list of ecolabel hotels in the city on the website.

The management of accommodation for players in DBU is predominantly oriented toward fostering the best performance of the team, the well-being of the players, and secondly, economic criteria are taken into account.

No environmental criteria are currently considered in the selection of accommodation, but in DBU they are still discussing internally the possibility of making changes in this direction and soon they could introduce virtuous changes:

- ⚙️ Consider the possibility of integrating environmental criteria into the selection of hotels, although not as priority criteria.
- ⚙️ Consider integrating green info sheets on accommodation of away fans. Benefits also in terms of reputation.
- ⚙️ Exchanging information on green accommodation near the stadium with foreign Federations.

The current picture taken on the DBU accommodation sector returns a low score compared to the other sectors as well (13.55%).

This obviously has a decisive weight on the final judgment, but some clarifications are necessary.

In fact, although some initiatives have never been taken into consideration to date, others are being examined by the Danish Federation and could be launched in the coming months.

This would obviously allow for a decidedly higher score to be returned and the speedometer to be moved towards a more circular approach (see final graphs).

Some critical questions had a decisive influence on the actual score, more precisely the absence of on-site visits to evaluate the environmental management of the accommodations to be selected, or the absence of information to provide to one's employees on green accommodations.

Again, the fact that staff members/players are not asked for advice on sustainability-related needs and the absence of synergies with the city or other city actors to boost green practices adoption by accommodation owners.

As mentioned above, this is a photograph to return the current situation. To date, preparing its matches, DBU has always sought the best conditions for its teams, without the sustainability characteristics affecting the choice.

It is obvious that, on the basis of the intentions declared by DBU - and the participation in the ACCESS project proves it - the next assessments and decisions will gradually introduce environmental canons, while guaranteeing the best conditions for their teams.

After all, a sustainable approach is an integrated approach, which does not involve giving up, but opens to a forward-looking vision and successes independent of those determined by the green rectangular field.

We are ready to reiterate that the same "measurements" applied to the DBU pipeline at the end of the ACCESS project will return a result very close to a circular approach.

Food and beverage: 40.17%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is the aspect food & beverages and related environmental impacts mentioned in your sustainability strategy or environmental policy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Not at the moment, but we are implementing it for the next version C) No, we do not have a sustainability strategy	B	0.5
Do you keep track of data about the food & beverages activities (amount of food consumed in the VIP area, amount of food consumed)	A) Yes, we have implemented a monitoring system and we have all data regarding food&beverages activities B) Yes, we have a monitoring system, but some data regarding food and beverages activities are still missing out	A	1

INDICATOR	Formula/answers	Result	KPIs RESULTS
in bar & kiosks, amount of beverage consumed, etc.)?	C) We are working to develop a monitoring system which now is not in place (evidence must be shown) D) It has never been evaluated		
Have you ever assessed the relevance of food and beverage originated by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint B) We are collecting data to assess accommodation's impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	C	0
Have your employees (staff/players) received information on food and beverages sustainability?	N. of employees trained on food and beverage sustainability /no. of match-day personnel dealing directly with food and beverage	0%	0
Do you use signage, communication channels or other approaches for highlighting more sustainable food and beverage options you may be offering?	A) Bar, kiosk and catering services regularly highlight the more sustainable option B) There is only some generic info in the bar/kiosk/VIP area C) No signage, communication channels or other approaches	B	0.5
How frequently do you evaluate fans' awareness of the environmental impacts of food and beverages choices during matches?	A) We carried out a reliable survey at least one time per year B) We carried out a reliable survey at least one time every three years C) It has never been evaluated	B	0.5
Do you require environmental and sustainability-related criteria (such as the use of non-plastic cups, compostable objects etc.) in your call for offers and tenders when it comes to food and beverage activities?	A) We have developed a food and beverage minimum environmental criterion that contractors/suppliers must comply with (must have) B) We have developed a food and beverage minimum environmental criterion that contractors/suppliers are suggested to comply with (nice to have) C) We are working on such criteria D) It has never been evaluated	D	0
Have you implemented food and beverages sustainable improvement actions (compostable cutlery, reusable cups, vegetarian/vegan menus, refill stations, elimination of single use products, locally sourced food, etc.) for your matches/events?	A) We have implemented at least one sustainable action compared to the previous year/situation and we have already planned to implement another one in the next three year B) We have implemented one sustainable action compared to the previous year/situation C) We have not implemented any action, but we are working on it (evidence must be shown) D) It has never been evaluated	B	0.66
How much resources have you invested to achieve improvement actions in the field of sustainable food and beverages?	A) More than 10% increase of the economic/human resources foreseen for food and beverages B) Less than 10% increase of the economic/human resources foreseen for food and beverages	B	0.66

INDICATOR	Formula/answers	Result	KPIs RESULTS
	C) No increase compared to the previous year, but still some budget has been foreseen D) Zero		
Have you ever involved your food & beverages contractors in environmental training (e.g., on how to manage waste produced in the kitchens)?	N° of food and beverages contractors trained in environmental topics / total N° of food and beverages contractors in all the events/matches in the year	0%	0
Has the organisation put in place collaborations with the municipality and other city actors, such as local suppliers, for the delivery of food and beverage in home matches/events?	A) There are set collaborations with the city actors to deliver local/environmentally friendly-food and beverages B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	D	0
Are you in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection)?	A) There are set agreements to discuss/coordinate actions to manage the waste produced by food and beverages activities and to improve waste collection B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1
Do you purchase locally (products/materials produced in the same region where it is needed)?	nr. of local suppliers / total nr. of suppliers	100%	1

The food and beverage sector in DBU is very articulated, as it ranges from the bar & kiosks sector to the catering service in the VIP area, up to the catering services located in the grandstands of the facilities.

Also, these can be different depending on whether the home games are men's national team or FC Copenhagen.

According to the current management, DBU entrusts the management of these services to external entities, regulating them through multi-year contracts.

In the "Food and Beverage" sector DBU recorded a score of 40.17%.

Also in this case, although to date some initiatives have never been taken into consideration, others are being examined by the Danish Federation and could be launched in the coming months.

This would obviously allow for a decidedly higher score to be returned and the speedometer to be moved towards a more circular approach (see final graphs).

Some critical issues had a decisive influence on the actual score, more precisely the absence of training courses for their employees on sustainability in the food and beverage sector, or the absence of require environmental and sustainability-related criteria (such as the use of non-plastic cups, compostable objects etc.) in its call for offers and tenders when it comes to food and beverages activities. Added to

this is the lack of involvement of their food & beverage contractors in environmental training (e.g., on how to manage waste produced in the kitchens) and the lack of collaboration with the municipality and other urban actors for the delivery of food and beverage during home matches/events.

Initiatives such as consider carrying out fan surveys to investigate their awareness of the environmental impact of food during a match and, based on the results, set up a communication/awareness-raising campaign and consider increasing the price of reusable cups so that people have the incentive to reuse them, for example, can further strengthen the path already undertaken in the field of sustainability.

Nevertheless, there are several positive initiatives that demonstrate that DBU has already started its commitment in the field of sustainability, from monitoring attendance and consumed meals per match, to considering food quality among the main requisites required of suppliers. Furthermore, different types of menus (vegetarian/vegan menus) had already been introduced for some time, even if they did not have a great response in terms of supporter preferences.

Mobility: 53.27%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Have you ever monitored the sustainability of fans mobility in home/away matches?	A) We have developed a system to track and monitor fans mobility B) We have identified the monitoring system, but we have not yet started tracking fans mobility C) We are still discussing this possibility at internal levels D) It has never been evaluated	A	1
If yes, what is the percentage of fans who use sustainable means of transport (e.g., bikes, public transport, walking, sharing, etc.) to reach the venue?	A) Over 75% of the fans use sustainable means of transport B) Over 50% of the fans use sustainable means of transport C) Over 25% of the fans use sustainable means of transport D) Less than 25% of the fans use sustainable means of transport E) It has never been evaluated	A	1
If yes, how frequently do you evaluate fans' mobility?	A) We carried out a reliable survey at least one time every three years B) We are discussing this possibility at internal levels C) It has never been evaluated	A	1
If yes, have you ever quantified the relevance of mobility originated by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment B) We carried out a carbon footprint + we collect quantitative environmental data C) It has never been evaluated	A	1
What is the percentage of employees who use sustainable means of transport (e.g., bikes, public transport, walking, sharing, etc.) to reach the workplace?	A) Over 75% of the employees use sustainable means of transport B) Over 50% of the employees use sustainable means of transport C) Over 25% of the employees use sustainable means of transport D) Less than 25% of the employees use sustainable means of transport E) It has never been evaluated	E	0
How much resources have you invested to achieve	A) More than 10% increase of the economic/huma resources foreseen for green mobility	C	0.33

INDICATOR	Formula/answers	Result	KPIs RESULTS
improvement actions in the field of sustainable mobility of fans and employees?	B) Less than 10% increase of the economic/human resources foreseen for green mobility C) No increase compared to the previous year, but still some budget has been foreseen D) Zero		
Have your employees (staff/players) received awareness raising actions on green mobility?	N. of employees subjected to awareness raising action on green mobility/ Total N. of employees	0%	0
Have your drivers received information on green mobility?	N. of drivers who received information on green mobility / Total N. of employees	0%	0
Do you organise awareness raising events on green mobility targeting your fans?	A) We carried out at least two awareness raising events on green mobility targeting fans B) We have already planned the event, but we have not yet carried out it C) We are still discussing internally the possibility of organising awareness raising actions on green mobility D) It has never been evaluated	B	0.5
Have you considered green criteria (Euro 6, methane, electric) in the selection of means of transportation for your players, staff, etc.?	A) Over 75% of the travels consider green criteria B) Over 50% of the travels consider green criteria C) Over 25% of the travels consider green criteria D) Less than 25% of the travels consider green criteria E) No green criteria are considered in the selection of the means of transportation	E	0
Do you have in place initiatives related to sustainable mobility of supporters with city actors (ticket of bus paid or discounted with ticket of match, free shuttles from train stations, increase number of trains etc.)?	A) We have developed such initiatives B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	C	0
Do you favour the use of bikes during match days, in collaboration with municipality? (Such as by having a bike parking in the proximity of the stadium or a stadium achieved by bike lanes?)	A) We have set specific initiatives to favour the use of bikes during the matches in collaboration with the municipality B) We have set specific initiatives to favour the use of bikes during the matches (without the involvement of the municipality) C) We are still discussing internally this possibility D) It has never been evaluated	B	0.66
Do you have municipality electric bikes/bikes/push scooter sharing station close to the stadium?	A) Yes B) We have requested to the competent authorities to install them C) We are still in the planning phase D) No	A	1
Do you have electric cars recharging stations in the	A) Yes B) We have requested to the competent authorities to install them	A	1

INDICATOR	Formula/answers	Result	KPIs RESULTS
neighbouring of the stadium?	C) We are still in the planning phase D) No		
Do you offset the carbon emission connected with mobility?	A) Yes, we offset all the carbon emission connected with green mobility B) Only partially or we are discussing and planning this possibility C) No	B	0.5

The mobility management in DBU, as with the choice of accommodation, also for the mobility of its representatives, the DBU first considers what is best for the team, to achieve results. is predominantly oriented toward fostering the best performance of the team, the well-being of the players.

The DBU has developed an important system for monitoring and collecting data on fan mobility.

In fact, at the end of each home match, fans who have purchased tickets online are asked a few quick questions, which also investigate the mobility-concerned aspects.

From these, it emerges that over 75% of the fans interviewed use sustainable means of transport to get to the stadium (bikes, public transport, sharing, etc.).

Although any green criteria (such as, for example, opting for less impactful transport solutions such as the train) regarding mobility or accommodation are currently applied in the organisation of team travel, DBU recognises that the application of environmental criteria in the organisation of team travel and the search for the best solution for the welfare of the team are not in conflict: for this reason, it begins to evaluate the possibility of integrating green criteria in the choices of means of transport.

Several improvements are planned, such as the desire to organize awareness raising events on green mobility for its supporters, or the possibility of organizing sustainable mobility initiatives in synergy with the city.

This will add to the many good initiatives that DBU can take to strengthen its path in this direction, from considering the possibility of integrating environmental criteria in the selection of bus suppliers for group travel, to considering the integration of information sheets on eco-mobility for home fans into traditional match-day information, up to evaluating the possibility of providing information on sustainable mobility for away fans. Information that could be shared with foreign federations to be transmitted to their supporters, generating a virtuous process.

Purchasing and supplier selection: 21.18%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is the aspect on sustainable procurement and a sustainable supply chain and related environmental impacts mentioned in your sustainability strategy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Yes, it is mentioned but it is not evaluated in detail C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability strategy	C	0.33
Do you take into account green criteria for purchasing and the selection of suppliers?	A) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, they are binding criteria and we consider them in purchasing and in the ranking for the selection of suppliers (must have) B) We have developed a purchasing and supplier environmental policy with minimum	D	0

INDICATOR	Formula/answers	Result	KPIs RESULTS
	environmental criteria to comply with, but such criteria are not binding for purchasing and the selection of suppliers (nice to have) C) We are working on it (evidence must be shown) D) It has never been evaluated		
How many suppliers are covered with environmental certifications?	N. of suppliers (relevant from an environmental perspective) with at least an environmental certification (at organisational level)/ Total N. of suppliers	0%	0
How many fertilizers you purchase are covered with environmental certifications?	% of organic fertilizers	0%	0
How many cleaning products you purchase are covered with environmental certifications?	€ of purchased green cleaning products / Total € of purchased cleaning products	0%	0
Have you ever carried out on-site audits evaluating the suppliers' environmental management (against your sustainability criteria, in their facilities and during matches)?	N. of suppliers (relevant from an environmental perspective) audited (in their facilities, during matches, etc.)/ Total N. of suppliers	0%	0
Have you ever assessed the relevance of your suppliers in terms of environmental impact?	A) We have considered them in quantitative evaluation metrics (such as LCA) B) We are collecting data to assess suppliers' impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	D	0
Have you ever assessed the relevance of the products/materials you purchase in terms of environmental impact?	A) We have considered them in quantitative evaluation metrics (such as LCA) B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	D	0
Have you ever involved your suppliers in environmental and circular economy training with regard to their activities (e.g., on how to manage waste produced during events, etc.)?	N. of suppliers involved in environmental and circular economy training / Total N. of suppliers with relevant environmental impacts	D	0
Have you ever received sustainability requests by your staff/players about their purchasing and suppliers needs?	A) We are receiving suggestions from staff/players on green purchasing and suppliers' selection B) We have created a specific channel (green whistleblowing) to give staff/players the possibility to provide suggestions, but it has never been used C) We are still internally discussing this possibility	D	0

INDICATOR	Formula/answers	Result	KPIs RESULTS
	D) It has never been evaluated		
How much resources have you invested to achieve improvement actions in the field of sustainable and circular purchasing and supplier selection?	A) More than 10% increase of the economic/human resources foreseen for sustainable and circular purchasing and supplier selection B) Less than 10% increase of the economic/human resources foreseen for sustainable and circular purchasing and supplier selection C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	D	0
Do you have a list of local suppliers?	A) Yes, we defined a list of local suppliers B) We are currently collecting information to create the list of local suppliers C) We are still internally discussing this possibility D) It has never been evaluated	A	1
Is the aspect on sustainable procurement and a sustainable supply chain and related environmental impacts mentioned in your sustainability strategy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Yes, it is mentioned but it is not evaluated in detail C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability strategy	C	0.33
Do you take into account green criteria for purchasing and the selection of suppliers?	A) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, they are binding criteria and we consider them in purchasing and in the ranking for the selection of suppliers (must have) B) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, but such criteria are not binding for purchasing and the selection of suppliers (nice to have) C) We are working on it (evidence must be shown) D) It has never been evaluated	D	0
How many suppliers are covered with environmental certifications?	N. of suppliers (relevant from an environmental perspective) with at least an environmental certification (at organisational level)/ Total N. of suppliers	0%	0

The "Purchasing and Suppliers selection" sector recorded a score of 21.18% and this contributes significantly to slowing down the speedometer race (see final graph) towards a circular approach.

Again, it should be noted that this is a snapshot taken to understand where DBU was located in terms of circularity, and that the entire organization is already working to achieve the goal, as demonstrated by participation in this project.

In addition to the initiatives that the DBU has in the pipeline and which - at the time of the assessment - had not yet been launched, such as the desire to integrate these aspects within its own sustainability strategy, the following aspects certainly influenced this assessment.

For example, at the time of the assessment, the presence of any green criteria for purchasing and the selection of suppliers, nor of suppliers covered by environmental certifications, was not found.

This answer could be connected to the fact that DBU relies on external contractors and therefore does not personally check these aspects, nor evaluate the relevance of its suppliers in terms of environmental impact or organize on-site audits for this purpose.

It is clear that in the short term, as demonstrated by the list of local suppliers it already has and the will to integrate these aspects within its sustainability strategy, the DBU will soon be able to direct, also through the contractual instruments that it will stipulate with the suppliers, attention to a more circular approach.

Certainly, the fact that most of the food and beverage suppliers in the Fan Zone are sourced from local suppliers, that environmental criteria are taken into account when purchasing the banners so that they can be used for different events, demonstrates a good basis. To make these interactions even more virtuous, other actions can be implemented such as evaluating the purchase of flags for the choreographies of the fans - in great demand by the supporters - in recycled plastic and evaluating the possibility of involving the suppliers of food and other products used in the fan zones in initiatives to raise awareness of environmental sustainability.

Waste management: 43.46%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is waste management mentioned in your sustainability strategy/policy?	A) Yes, it is mentioned and evaluated in quantitative terms B) Yes, it is mentioned and evaluated in qualitative terms C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability/policy strategy	B	0.66
When establishing your waste management goals, do you take into account the policy priorities of your city?	A) Yes, we have discussed and shared the objectives with representatives of the municipality B) Yes, we are aware of the municipality's waste goals because we consult their waste policy documents C) Yes, but without careful verification D) No	C	0.66
If you have a policy, how much of your waste management objectives reflect the targets of your local/regional authority? (Waste prevention, increasing overall recycling rates, elimination of certain items or material, landfill diversion targets, separate waste collection rates, carbon targets, reduction of food waste)	% of objectives consistent with the city's priorities	0%	0
How often are you in contact with your relevant local/regional waste authorities for	A) At least once every year B) Periodically, but without a defined timeframe C) We are not in contact with such authorities	C	0

INDICATOR	Formula/answers	Result	KPIs RESULTS
understanding the new priorities and targets?			
Do you keep track of data about waste management (amount of waste produced in the stadium/event, percentage of recovery/recycling/landfill according to waste management indicators of your city/region, etc.), through a system of performance indicators?	A) Yes, we have implemented a monitoring system and we have all data regarding waste B) Yes, we have a monitoring system, but some data regarding waste are still missing out C) We are working to develop a monitoring system which now is not in place (evidence must be shown) D) It has never been evaluated	C	0
Has the organisation clearly defined which actors (the organisation itself, the suppliers, the municipality, the waste management operator, etc.) are in charge of waste collection during matches/sport events (inside/outside the stadium)?	A) All situations are clearly identified by the organisation in advanced and the actors in charge appointed without any issue B) All situations are clearly identified, but sometimes there is uncertainty on who should be in charge of waste management and misalignments might happen C) It has never been evaluated by the organisation, since other actors take care of waste management	B	0.5
Do you carry out during the match some on-site visits around and inside the stadium in order to understand issues related to waste management? For example: need of bins (in case of separate waste collection, etc.)?	n. of matches/sport events where waste management is checked through on-site visits / n. of matches/sport events	100%	1
Have you ever assessed the relevance of the waste produced by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint considering waste data B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.66
Have your employees (who work directly with waste) received information on waste management?	N. of employees who work directly with waste trained on waste management / Total N. of employees who work directly with waste	100%	1
How many awareness raising activities/events on waste management environmental impacts targeting your fans have you organized?	A) At two least two awareness raising activities B) One awareness raising activity C) No awareness raising activities	C	0
How frequently do you evaluate fans' awareness of the environmental impacts of waste management	A) We carried out a reliable survey at least one time every three years B) We are planning C) It has never been evaluated	A	1

INDICATOR	Formula/answers	Result	KPIs RESULTS
choices during your matches?			
Have you implemented waste management improvement actions (waste collection signals, separate collection, take-back systems, etc.) for your matches/events?	A) We have implemented at least two sustainable actions compared to the previous year/situation B) We have implemented one sustainable action compared to the previous year/situation C) We have not implemented any action, but we are working on it (evidence must be shown) D) It has never been evaluated	C	0.33
Do you donate the leftover food to local city actors (e.g., caritas, parishes, etc.)? Or use other approaches to avoid the food waste (Too Good to Go, for example)	Nr. of matches with food donation / Total nr. of matches	0%	0
If you do not donate the leftover food, does the organic waste go to composting facilities inside the city?	A) Organic waste are composted inside the stadium facility B) Organic waste goes to composting facilities within the city C) Organic waste goes to composting facilities outside the city D) We have unsorted collection/we do not know	D	0
Are you in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection)?	A) There are set agreements to discuss/coordinate actions to manage the waste produced outside the stadium and to improve waste collection B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	D	0

The "food and beverage" sector records a score of 43.46%. DBU mentions and evaluates waste management quantitatively in its sustainability strategy and waste management objectives are formulated with the city's political priorities in mind, albeit without careful scrutiny.

He has been working for some time to develop a monitoring system, evidence of which will be shown in the coming months.

Regarding the division of roles between the various actors in the waste collection area, in DBU all situations are clearly identified, but sometimes there is uncertainty as to who should be responsible for waste management and mismatches could occur.

In addition, DBU is collecting data to assess environmental impacts and all of its employees (who work directly with waste) have received information on waste management.

Although the leftover food is managed by the various entities that manage the F&B areas, DBU uses Parken Stadium as the epicentre of a large collection of near-expired, but still genuine food, which is delivered - 3 times a week - to the people of the state of need.

In addition to these good initiatives, DBU could improve the monitoring of the quality and type of waste collected in the fan zone and carry out communications to fans aimed at improving the quality of waste collected in the fan zone, so as to make its approach in the "waste management" area more circular.

Stadium and infrastructural improvements: 48.30%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Are sport facilities and stadium infrastructures (Please see Stadium infrastructures guidelines of UEFA for a definition) mentioned in your sustainability strategy/policy?	A) Yes, they are mentioned and evaluated in quantitative terms B) Yes, they are mentioned and evaluated in qualitative terms C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability/policy strategy	A	1
When establishing your stadium infrastructure goals, do you take into account the policy priorities of your city?	A) Yes, we have discussed and shared the objectives with representatives of the municipality B) Yes, we are aware of the municipality's waste goals because we consult their waste policy documents C) Yes, but without careful verification D) No	C	0.33
If you have a policy, how much of your stadium infrastructures objectives reflect the targets of your local/regional authority?	% of objectives consistent with the city's priorities	33%	0.33
How often are you in contact with your relevant local/regional authorities for understanding the new priorities and targets related to stadium infrastructure and sport facilities?	A) At least once every year B) Periodically, but without a defined timeframe C) We are not in contact with such authorities	B	0.5
Do you have a maintenance management system for infrastructural improvement interventions with regard to sustainability?	A) Yes, we have implemented a maintenance management system, with KPIs, and we set sustainability criteria and objectives B) Yes, we have a maintenance management system, but without clear and defined sustainability criteria, KPIs and objectives C) it has never been evaluated	C	0
In case of new building or infrastructures, have you defined sustainability criteria and objectives to integrate in their design (eco-design) and development?	A) Yes, we have set clear sustainability criteria and objectives, which are mandatory (must have) B) Yes, we have set clear sustainability criteria and objectives, but they are not mandatory (nice to have) C) it has never been evaluated	A	1
Have you ever assessed the relevance of the stadium infrastructures and sport facilities in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint (or similar quantitative metrics) B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.5
Have your employees (staff/players/coaches)	N. of employees trained on sustainable management of stadium infrastructure and sport	0%	0

INDICATOR	Formula/answers	Result	KPIs RESULTS
received information on sustainable management of stadium infrastructures and sport facilities?	facilities / Total N. of employees who work on stadium infrastructure		
How many awareness raising activities/events on stadium infrastructures and sport facilities environmental impacts targeting your staff (employees, players, coaches, etc.) have you organized?	A) At two least two awareness raising activities B) One awareness raising activity C) No awareness raising activities	B	,5
In case of ownership of the stadium by a city actor (e.g., municipality), have you set and implemented with the actor sustainability improvement actions regarding the stadium infrastructure?	A) There are set and joint agreements with the city actor to improve the sustainability of the stadium infrastructure B) We are currently working on it (evidence must be shown) C) It has never been evaluated	C	0
Even if you are the owner of the stadium, have you set and implemented with the city actors (i.e., municipality) sustainability improvement actions regarding the stadium infrastructure?	A) There are set agreements with the city actors to improve the sustainability of the stadium infrastructure B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1
Have you ever offset your carbon emissions linked with the use of sport facilities and stadium infrastructures?	% of offset carbon emissions connected with sport facilities and stadium infrastructures	0,00%	0

The interactions relating to "Stadium infrastructural improvements" were among the most virtuous of DBU management, with a score of 48.30% and several good initiatives to highlight. The infrastructure department has recently begun, at the urging of a sponsor like Carlsberg, to consider environmental aspects in the management of stadiums.

In the DBU sustainability strategy, all sports facilities and stadium infrastructure are mentioned and evaluated in quantitative terms and all the infrastructure objectives of the stadium are formulated taking into account the political priorities of the city. Around a third of the objectives relating to its infrastructures are coordinated with those of the local authority where the stadium is located, thanks to a dialogue that goes on continuously and also for all new sports infrastructures, DBU has established - coordinated with the authorities' superordinate - a set of sustainability criteria to be followed for construction.

In addition, DBU is collecting data to assess environmental impacts and organizes an annual awareness activity/event on the environmental impact of stadium infrastructure and sports facilities for its staff (employees, players, coaches, etc.).

The fact that all the suggestions on possible good practices to be implemented were welcomed by all the department heads interviewed, suggests that there are many possibilities to make the management of these aspects even more virtuous in DBU, above all by benefiting from a partnership with an environmentally conscious sponsor like Carlsberg.

Finally, the envisaged staff training activity will be able to introduce the dimension of sustainability into daily work activities and demonstrates - once again - how the DBU approach will soon be defined as "circular" also in the "Stadium infrastructural improvements" sector.

4.2.5 Overall results

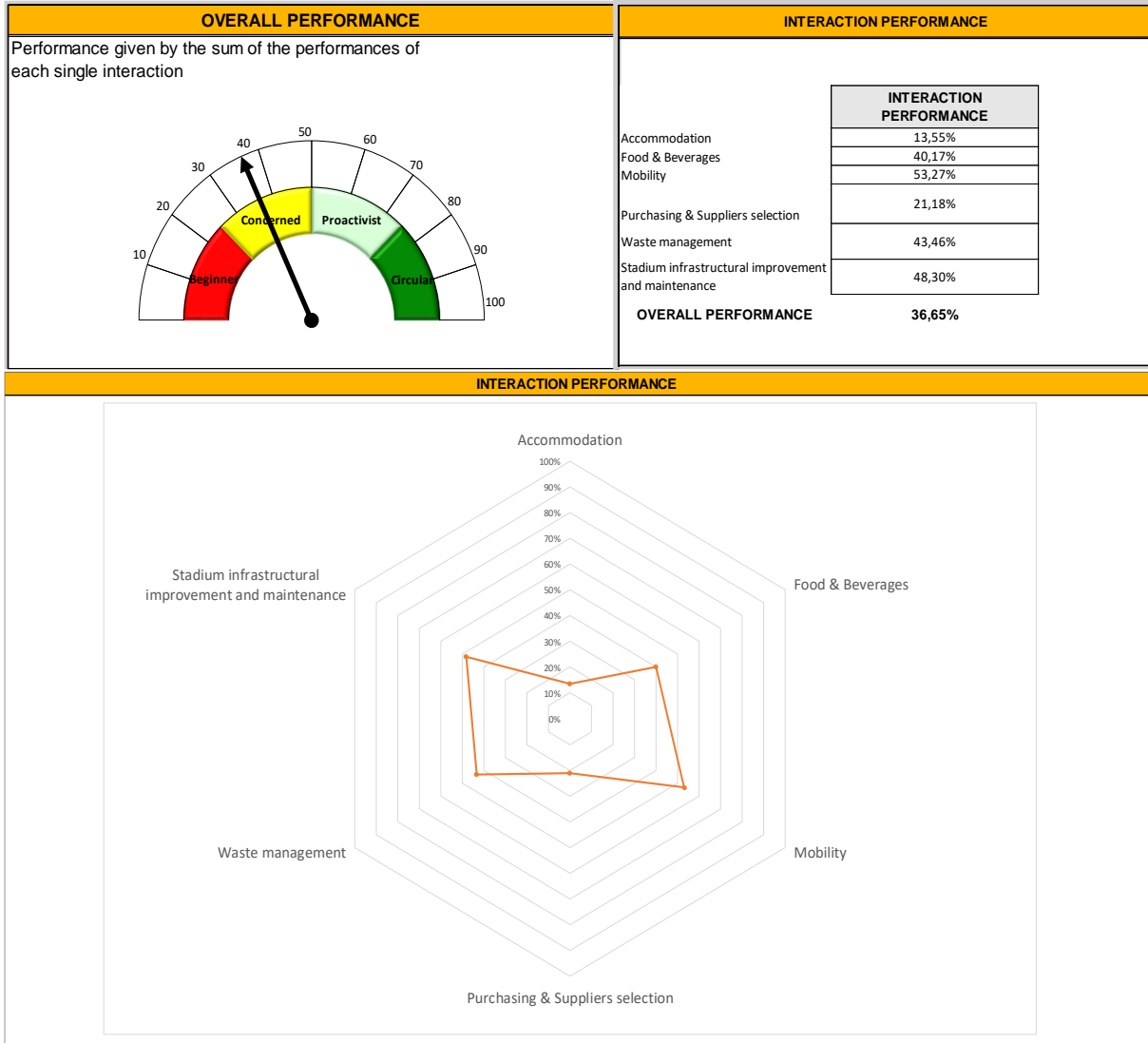


Figure 2 - The graphical results emerging from the application of the tool

Following the presentation of the results, the style of behaviour of the DBU in terms of circularity is "concerned". The circularity performances are represented both through a speedometer, which serves to present the overall performances, and through a target graph, which serves to represent the performances for each phase.

The overall performance was 38.86%, demonstrating how DBU has started its commitment and intends to strengthen it more and more over time, as demonstrated by participation in this project and by what has been remarked in the previous sections of this document.

In detail, the management of the area "mobility" (53.27%), "stadium infrastructural improvement and maintenance" (48.30%) and "waste management" (43.46%) are the most performing in DBU conduct in terms of circularity.

Ample room for improvement can be found in the sections "Food and Beverage" (40.17%), "Purchasing & Suppliers events" (21.18%) and "Accommodation" which would allow DBU to get even closer to a "proactive" circular performance!

It should be remembered that, at the basis of the process of analysing the company's circular economy performance, there is the ability of the sports organizations and local realities involved to monitor their own actions. Although, as already mentioned, there is a good basis from this point of view, there are still some areas for improvement in terms of availability of the data necessary for the correct and complete compilation of the tool. Moreover, it should be noted that due to the fact that the stadium is not owned by DBU, the degree of influence with respect to some areas of investigation, such as those of "infrastructural improvement", is effectively limited and this has an impact on the final score.

For this reason, the first recommendation emerging from the application of the tool concerns the ability to quantitatively monitor the company activities connected with the indicators included in the tool in order to have a more complete assessment during future assessments or future implementations.

The following table summarizes in detail for each phase the number of indicators for which it was not possible to carry out an evaluation.

Interaction	Indicators not calculated due to unavailability of values
Accommodation	1
Food & Beverage	/
Mobility	/
Purchasing & Suppliers selection	1
Waste Management	1
Stadium Infrastructural improvement and maintenance	/

The future strategy of DBU on the theme of circularity can have - from now on - a dual purpose. On the one hand, continue to populate the set of indicators by reducing the number of indicators that cannot be calculated due to lack of data. On the other hand, start activating targeted actions aimed at increasing the performance of each individual indicator that can already be calculated to stabilize its overall performance in the "circular" category, with an average performance of over 75%.

However, other aspects have already entered the management thoughts of the DBU and are "in the construction phase": this suggests that - already in a few years, through the introduction of the improvements suggested in this document and summarized in the following table - the approach of DBU can be decidedly more circular and stand as an example for other contexts.

Interaction	Possible improvements
Accommodation	Consider the possibility of integrating environmental criteria into the selection of hotels, although not as priority criteria.
	Consider integrating green info sheets on accommodation of away fans. Benefits also in terms of reputation.
	Exchanging information on green accommodation near the stadium with foreign Federations.
Food and Beverage	Consider carrying out fan surveys to investigate their awareness of the environmental impact of food during a match and, based on the results, set up a communication/awareness-raising campaign.
	Consider increasing the price of reusable cups so that people have the incentive to reuse them.
Mobility	Consider the possibility of integrating environmental criteria into the selection of bus suppliers for team travel.

	Consider integrating eco-mobility information sheets for home fans into the traditional matchday information. Also benefit from a reputational point of view.
	Consider providing information on sustainable mobility for away supporters. Information that could be shared with foreign Federations to be passed on to their supporters.
Purchasing and Suppliers selection	Purchasing flags used for supporters' choreographies made of recycled plastic.
	Consider involving suppliers of food and other products used in the fan zone in environmental sustainability awareness raising initiatives.
Waste Management	Improve the monitoring of the quality and type of waste collected in the fan zone.
	Carry out communications to fans aimed at improving the quality of waste collected in the fan zone.
Stadium Infrastructural improvement and maintenance	The Danish Football Federation can benefit from the collaboration of an environmentally aware sponsor such as Carlsberg.
	Based on the interview, it notes the possibility of carrying out training activities for staff to accompany them in bringing the sustainability dimension into their daily work activities.

4.3 THE GAELIC ATHLETIC ASSOCIATION

4.3.1 Interview reports

Partner	GAA
Topic	Food & Beverages
Interviewee	Shane Hand
Position	General manager at Aramark Northern Europe
Interviewer	Ernest Kovacs, ACR+
Date	16/01/2023
Duration	60 minutes

Roles and Responsibilities

Shane Hand is the Senior Operations Manager of Sports, Leisure and Entertainment at Aramark Northern Europe. Aramark has a 10-year contract with Croke Park. They are currently serving both matchday and non-matchday events (conference, concerts ...) – from regular visitors to VIP.

The contract was not yet signed at the time of the interview. Occasional meetings take place with Croke Park.

Policy, mission, and strategy

There was no particular strategic document which defines what sustainability should about or demands/requirements from Croke Park, but there are certain goals that need to be achieved. If something wouldn't work, the contract can be amended.

The company (Aramark) however, has its own objectives, which revolve a lot around waste management and sustainable sourcing.

Assessment of Food & Beverage

Aramark hires personnel responsible for site visits during matchdays with the Croke Park employees. Their mission is to observe and report, highlighting hotspots and improvement potentials. Dynamics are different for each matchday; therefore, the food and beverage supply rely a lot on data collection and sound planning. The data is key to Aramark and the collected data is used in the best manner.

For data collection and assessment, a software called Kappture is used. 30 of the existing tills were replaced with next-gen POS terminals, cash draws, and EFT, whilst the remaining 366 underwent a modernisation that reimaged the terminals and updated them with the latest Kappture software.

This work was completed by a team of 3 installation engineers over a 5-day period, allowing for time to ensure that full integration and staff training was completed ahead of the first fixture of the year on 27th January 2018.

Not only did this deliver lightning speed transactions, but also for the first time in the stadium's history enabled real time reporting and customisable dashboards for quick KPI analysis.

The data collected such as counts overproduction and underproduction allows the service provider to optimise and plan portions (sizes and quantities). Certain collected data, once run against stocks can also indicate theft or other losses.

In terms of ingredients, nearly all the food is locally or nationally sourced. The contractor's purchasing department is in charge of ensuring this, in order to keep the environmental footprint as low as possible. The stadium sells burgers, chips and other traditional items. There was a vegan/vegetarian unit but it was on disposal only for the premium areas (VIP, corporate and similar). Regular visitors didn't have access to these.

Drinks were served in compostable or recyclable cups. This is one of the initiatives to cut the use of plastic products which would be landfilled. The cutlery, crockery and plastic bottles are all either compostable or recyclable. Food donation is not possible due to HACCP rules.

In terms of collaboration with authorities, the contractor doesn't have any communication with them. They expect the stadium to update them on new regulations and rules.

Planning

The data collection systems through Kappture helps the contractor plan the food quantities and at the same time optimise serving during a matchday itself as all the tills feed into a central database. The contractor also carries out occasional visits to food producers across the country.

Communication

The interviewee said that there wasn't as much communication as there should have been. They advertise on stadium screens and there is signage to direct visitors. The sustainable sourcing and other good practices are communicated on non-matchdays (Conference), rarely on matchdays.

Partner	GAA
Topic	Mobility
Interviewee	Brian Conlon, Tony McGuinness
Position	Head of Stadium Operations & Projects, Head of Stadium Operations & Events
Interviewer	Ernest Kovacs, ACR+
Date	05/01/2023
Duration	75 minutes

Roles and Responsibilities

Brian Conlon has been working for Croke Park for the last 8.5 years and in the current position for the last 6 years, reporting directly to the Stadium Director, Peter McKenna. His responsibilities span across buildings, facilities, projects, and additional initiatives under the GAA umbrella. Tony McGuinness has been with Croke Park for the last 22 years, as head of safety, controller for matchdays and concerts. Since recently, he oversees jointly wider operations.

A mobility manager does not explicitly exist as a title or position at Croke Park, but it does fall under stadium operations and obviously events. Mobility is however discussed among a wider management team which meets weekly and includes staff members such as the team director, finance director, sponsorship and marketing, along with the two interviewees.

Policy, mission and strategy

There is no particular strategic document targeting mobility explicitly. Things are rather happening ad-hoc or are imposed by the authorities that GAA picks up on. However, the previously mentioned weekly management team's meeting serve as a place and opportunity to reflect, review, and eventually improve certain practices or approaches. But a strategic approach is missing.

The reason for not having an integral and overall strategic approach is because the stadium hosts events of different size and attendance. Small and local events are easier to organise as there isn't pressure on the traffic and access. However, big games on the other hand require meetings with the city council, public transport company etc. and plans are drafted for each event. Big events require signage, communication, and more organisational efforts.

In terms of local policies and targets, the Dublin City Council aims at increasing users of alternative mobility and soft mobility, especially cyclists. An existing policy tries to deter vehicles from parking on cycling lanes. Alongside, parking rates and fees increased dramatically, as well. What visitors do instead is driving to the outskirts and parking there and continuing their journey by local train, bus or tram services. However, capacity issues can arise occasionally, especially on weekends when combined with shopping.

Assessment of visitors' mobility

Mobility on a matchday can often depend on the counties (teams) playing which implies different occurrences happening each time and thus tailor-made solutions are required. Many of these are based on where the visitors are coming from. In most cases, unless County Dublin plays, all visitors are coming from outside Dublin. Concerts are different, as 50% of the visitors are from Dublin. When Dublin plays, there is a high proportion of people walking to the stadium as there is a social element to it – dining, eating, and drinking (thus avoiding driving).

Croke Park was renting a car park right next to the stadium, but it got sold. Now, the stadium provides parking only for team officials and disabled visitors or visitors with reduced mobility. Visitors who were usually coming by car are aware of this and other disadvantaging factors (parking fees, loss of parking spaces in favour of cycling lanes) and are now coming by alternative means. A new bike park was installed, and it would normally be used to a rather large extent. It does have CCTV cameras in operation, but Croke Park doesn't advertise the bike park as a secured one. Active and alternative mobility is becoming more present – modest steps are taken.

A bike sharing platform is also available in the stadium's imminent vicinity. About a 6 minutes' walk to 6 different stations. However, one limiting factor for their larger use is the fact that the stadium is on the edge of the stadium's perimeter, thus visitors from beyond the perimeter can't use them.

Two charging stations for electrical vehicles are available next to the stadium.

For those coming from further away, digital signage is provided as well as advanced messaging – indicating and highlighting certain routes to be taken and where to park. This is especially present in case of directing buses.

Data regarding mobility is lacking and isn't collected. However, it exists in different forms and formats:

- ☀ Locally, the stadium would count the number of vehicles the police might have clamped as an indicator of illegal parking.
- ☀ The stadium knows how many disabled visitors and visitors with reduced mobility used the stadium's parking.
- ☀ There are licences which are distributed to bus operators by the national transport authority which allow them to enter the city, but a licence doesn't specify if it is one bus or 20 that are allowed to enter. Nevertheless, on matchdays, many private coaches without a licence enter the city and take up parking space. The police could have a good idea how many buses enter the city on a matchday/concert.
- ☀ Surveys and similar qualitative/quantitative data weren't collected for the last 5+ years.

Therefore, with a lack of data, no quantification of environmental impacts could be conducted.

Assessment of the Staff's mobility

The GAA has its own car park which offers free parking for all staff members. On matchdays or concerts, there could be as many as 200 vehicles parked there. However, on regular days (non-matchdays), less pressure as many of the staff lives within a 5 km - 10 km radius.

An internal survey was conducted.

Training

There was earlier an involvement of the Northeast section of the City Council held informal meetings and briefings on various topics, such as greening the area but more notably - sustainable mobility. Key staff moved onto other positions and the momentum was lost. This is something the stadium wanted to restart.

Communication

Croke Park had initiatives to provide sufficient instruction and directions for visitors and ran trials but without much success as depending on the event, visitors were coming from different parts of Ireland. Not sufficiently positive feedback.

Apart from that, Croke Park was recently accredited by Age Friendly Ireland, a health organisation campaigning for elderly people's wellbeing. This means Croke Park is an age friendly venue with number of initiatives, seats closer to the pitch, special teams on site to assist elderly visitors. This process included groups of elderly people who were providing input.

Internally, a survey was conducted on the staff's mobility patterns.

Planning

The core and priority of the stadium's operations are improvement and progression. These are shared during the regular meetings. Collaboration and improvements are evident as many other stakeholders are brought on board for various reasons. Police and representatives of the city council attend the meetings and give statistics on illegal parking, and we link these to where the visitors come from. The national transport authority attends these meetings for any of the big events. There would be a lot of meetings for large events, often revolving around 3 working groups: for the community and residents, for infrastructure and policing and one for transport. These usually worked very well.

Generally, performance indicators are missing for better planning and monitoring. Certain indicators do exist, but they aren't owned/collected by the stadium.

One of the biggest issues the stadium has (as well as other larger venues) is that there is no plan for private coaches on the city level. Once the expansion of cycling lanes is added, an obvious shortage in parking spots is evident. When it comes to the collaboration with bus agencies and operators, and monitoring the buses, the pressure is put onto the stadium by the city council.

The second problem is the inefficient and limited “park and ride” option where away visitors could leave their vehicles and continue their journey on public transport or shuttle buses.

Partner	GAA
Topic	Purchasing
Interviewee	Ger Hanratty
Position	Croke Park Operation and Facilities Executive
Interviewer	Ernest Kovacs, ACR+
Date	11/01/2023
Duration	45 minutes

Roles and responsibilities

Ger Hanratty is the stadium’s Facilities and Operations Executive. He is managing the facilities aspects, electrical, mechanical, water and other utilities matters. He reports the stadium’s Head of Operations.

The department includes two more staff members which cover events and safety and other general operations. The interviewee is responsible for managing contractors delivering services to the stadium – electric, cleaning, maintenance among others. Direct purchasing covers daily maintenance, sanitary consumables, stationery and similar. The contracts are usually 3-years long. Once they end, the stadium opts for roll-over contracts to cover events.

Policy, mission, and strategy

Policy wise, what the stadium is looking for are various environmental certifications, ISO standards, zero landfill policies in terms of waste management and similar. There is a 100% buy in to reflect these requirements. The stadium was formalising its tender documents for the years ahead.

The running contracts include monthly or fortnight meetings. There is an ongoing engagement to ensure that the standards would be met and maintained. Contracts are flexible for accepting and looking at new practices.

Assessment of purchasing

When choosing contractors, a point system is used in the selection process. Different weighing is applied depending on what the project would be about. For significant projects, the stadium would look for formal tender agreements.

The data about purchasing and selection is collected, and the department would be tracking those that are required to be met.

When purchasing and sourcing, the emphasis is certainly on local products and goods, but considering the size of the country, sometimes the outreach needs to include neighbouring countries. The end use of the product gets more attention (being compostable or recyclable).

The collaboration with the local authority exists, as the interviewee would be the contact with the council on matchday cleaning. While the stadium is responsible for cleaning within the stadium perimeter, the local council covers the extra perimeter. Croke Park financially supports the council’s cleaning efforts. There is also a pest control arrangement with a supplier to tackle rodents and littering.

KPIs are managed indirectly. Not by the stadium but when the stadium is audited. These could include audits by SGS for ISO. Those audits encompass of many operations and processes. The auditors would flag non-conformities and other shortcomings.

When it comes to cleaning, a degree of adopting green initiatives exists, but they don't get the attention it needs – more inclined to safety and less to environment.

Planning

In terms of planning, it depends a lot on what is happening in the stadium and what is planned and what is expected from the stadium. Most of the planning is done prior to the season and it includes concerts, finals, matchdays etc. The stadium encourages the contractors to go for the best solution.

The suppliers are the ones who send the documentation and listing of what is out there in terms of products, technology etc. The stadium doesn't do any research but look at offers from suppliers instead.

Furthermore. Special planning takes place for project-based initiatives such as solar panels throughout the stadium in order to produce own electricity, adding charging points for electric vehicles or considering rainwater harvesting. These would require a slightly different approach to purchasing. The stadium was also considering enrolling reusable cups.

As for policies and requirements imposed by authorities, those are mainly national authorities who would introduce new requirements, but nothing reaches the stadium per se – most commonly the contractors/suppliers flag such changes.

Training

Training takes place for suppliers, mainly on waste management policies on site. When sourcing materials they need to be aligned with the stadium's waste stream policy. The stadium discourages single use products and packaging needs to be compostable or recyclable.

Communication

There is some internal communication on these topics through internal working groups – often having representatives from various departments. When a green initiative appears, it would be disseminated through internal communication channels.

Partner	GAA
Topic	Waste management
Interviewee	Colin O'Brien
Position	Croke Park Operation and Sustainability Executive
Interviewer	Ernest Kovacs, ACR+
Date	09/02/2023
Duration	35 minutes

Roles and Responsibilities

Main roles of the interviewee cover stadium facilities, environmental management and sustainability. He reports to Brian Conlon, the Head of Stadium Operations. He has been in this role since April 2022. Prior to that, he worked at the national sport campus for Sport Ireland.

Most of the responsibilities and major involvement occurs on matchdays – monitoring and supervising the waste generation, separation and collection and general operations. Also responsible for various awareness raising measures among staff and visitors. The interviewee receives data on waste quantities monthly to work with.

On a daily base, there is not much waste being generated in the office areas.

Policy, mission and strategy

The stadium has its waste policy which is aiming at achieving zero landfill. It is a part of a larger sustainability strategy and sustainability goals that waste management is a part of, beside energy, water, biodiversity, travel and transport. The targets include increasing recycling rates, reducing single use products. This plan helps defining goals and objectives.

The waste management strategy and approach differ from the local practices for households. The stadium's strategy and principles are considered exemplary and having their own model allows them to optimise operations. Many organisations are coming for site visits and try to replicate the stadium's practices.

Since 2008, there were proper waste policies put in place. The policies are based on waste partners' advice on waste streams.

Priorities are avoidance of single use products and increasing overall recycling rates.

Assessment of waste management

The stadium works with two main cleaning companies – one providing cleaning for outdoors and another for indoors. Outdoors include litter picking, cleaning the concourses, toilets and the outside perimeter. Interventions take place 3 hours before the game (making sure everything is clean) and 3-4 post event (cleaning the stands, toilets, concourses). The indoor comprises of cleaning the corporate suites and corporate area. The interviewee manages those contractors, report issues. Meetings take place before and after a match.

The cleaning contractors separate everything on site, puts the waste in a compactor which is located inside the stadium. Three streams are treated separately, recyclables, compost and general waste. The collection takes place either after the match if full house or every 2-3 weeks if the temporary storage allows.

Collection is done by a waste partner who ensures proper treatment and reports back to the stadium with data on amounts.

Other streams which occur are treated by additional waste partners – hazardous waste (leftover paint, petrol and other fuels) and waste electric and electronic equipment.

The monthly data tells recycling rates and what was sent to landfill. Mainly wrong bins and wrong separation affects the numbers. There is a trend to have higher impurities during larger matches. Data is discussed quarterly with the management which allows timely improvements. There are no targets per-se. The key target is to achieve 100% recycling.

Site visits take place on matchdays to ensure that the bins are not overflowing and there are also cleaning supervisors who intervene if something happens. If any issues, they are dealt with very fast.

Planning

Meetings are held quarterly, and the discussions depend on data. If the figures are bad, the department is putting actions in place, targeting flaws. If the data is good, they keep it going.

Meetings are also regular with the city council as a key stakeholder. The council looks after the post event cleaning around the stadium. The stadium has meetings where the size of the game is assessed, number of visitors, what streets are going to be affected. The stadium participates with a fee for cleaning.

Training

Trainings take place once a year for the staff and all stakeholders to go through the procedures in order to be able to monitor. The waste partners come in as external experts for additional knowledge transfer. Many other venues don't train their staff on correct waste segregation. The staff and stakeholders need to understand why the stadium puts efforts in minimising waste production, understand what happens to the waste and where it goes. Above all, the department wants to empower the staff and take pride in their waste procedures and practices.

Communication

The staff receives sufficient information during trainings and briefings described above.

Visitors are communicated waste related messages on big screens, during the intervals or before the match and after. There are videos and even messages for around the stadium. Volunteers are helping, too. The waste bins are marked with colours which match the colour schemes in households. Three bins are available: general waste (red/black), recyclable waste (green) and compostable (brown).

Partner	GAA
Topic	Infrastructure and maintenance
Interviewee	Ger Hanratty
Position	Croke Park Operation and Facilities Executive
Interviewer	Ernest Kovacs, ACR+
Date	09/02/2023
Duration	45 minutes

Roles and responsibilities

Ger Hanratty is the stadium's Facilities and Operations Executive. He is managing the facilities aspects, electrical, mechanical, water and other utilities. He reports the stadium's Head of Operations.

The department includes two more staff members which cover events and safety and other general operations. The interviewee is responsible for managing the facilities on the daily basis, as well as onsite teams - electrical, cleaning, plumbing, general maintenance, lifts and escalators and more. He reports to Brian Conlon, Head of Stadium Operations & Projects.

Policy, mission and strategy

What the infrastructure maintenance and investments revolve around are defining what projects and areas need attention, trying to have as few reactive and ad-hoc projects as possible.

Prioritisation goes on upcoming issues that are foreseen, such as a number of seats that are reaching their end of life in the lower tier of the stadium, after 30 years. Other priority improvements include machinery and equipment for maintaining the playing surfaces and existing infrastructure such as tractors, grass cutters, grow lights. If those break down the situation would become critical. Tender going out for all of those. Less priority currently given to corporate areas and their refurbishment. The stadium needs to balance between "like to have" and "need to have".

The sustainability policy and commitment come in during the phase of reviewing and assessing the bids and offers. Each tender has 8-9 headings (financial impact, strategy, innovation ...) with two of them is reflecting sustainability and environment and various policies such as the Net Zero by 2030. All the bids and offers and their environmental sustainability headings are scored and weighted as the other headings.

However, the decision making, and the scoring doesn't follow any previous guidelines or strategy. The staff is learning on the go. The current tender the interviewee is reviewing are the seats project. There weren't many references to sustainability in the offers, but there were accreditations submitted, examples of community engagements and initiatives. Often, this is enough for the board as the stadium is not there yet with a more thorough assessment of environmental criteria.

In terms of strategies and approaches, it is rather two-fold - day to day element and gameday element.

Assessment of infrastructure management

When it comes to day-to-day maintenance, it is very diverse - big stadium, different agendas, activities, and objectives in various departments exist. Even though the operations department had their hand on everything, some malfunctions occur (broken or malfunctioning bulbs, toilets ...). As the stadium has different service providers (plumbers, electricians, mechanics ...), it needs to be ensured that everyone does what they are contracted for and that the time between the identification of a malfunction and its elimination is minimal and involves as less people as possible. In order to achieve this, an app was developed by a contractor in which anybody can flag a malfunctioning (targeting all the services – cleaning, mechanics, cleaning...). Those little tasks are completed with no or minimal delays. The interviewee is the administrator, which allows proper delivery of tasks to appropriate services. The services go back to him with a report which feeds into a traffic light scheme – red for not solved, orange for missing parts or more complicated reparations and green for completed work. This is assessed daily and contributes to putting accountability on different people. The interviewee highlighted hundreds of tasks a month and puts accountability on people. If recurring issues come up often it would be the time to address it properly.

Matchday maintenance, on the other hand, includes 14 or 15 radio channels for security, stewarding, medical assistance among others. An event control oversees all channels. In the past, trivial issues were sent through the channels, such as blocked toilets, leaks, lift breakdowns, entrapments with some being more and some less critical. Therefore, the stadium added facilities control channels, two of them: one for cleaners, plumbers, lift, escalators, catering and the second channel dedicated to allowing various supervisors mainly concerning security and medical assistance to flag issues such as broken lifts, damaged CCTV cameras.

Planning

The stadium operation department normally identify where infrastructural projects would be necessary and beneficial. This would also require assembling a budget these improvements would require. Altogether, this plan goes to the board who make the decision. The list is accompanied by the department's advices on long and medium term projects, and overall budget projections for the following financial year (submitted in September). Interventions and budget necessary for urgent works are included to for reactive interventions.

KPIs exist, thanks to the app. However, any kind of granular data doesn't exist yet and no proper monitoring of this data has been set up yet. The app exists for the last 6-7 months. The priority now is to feed information into it, get people used to it, and then develop a monitoring system.

Training

A training took place for the employees in order to optimise the alerting system and minimise delays or malfunctions (wasting energy and water among others). This was during the test phase of the new app.

The test phase with a trial version included 5 people, mainly linked to stadium operations and maintenance. If the app and the new communication system didn't work then, it wouldn't become such an important tool nowadays. There were some improvements done to the app and new features. After the test, the buy in was positive and its usage is very positive. Entire operations department is on it now, around 20 people.

Communication

Internally, emails and calls are still used, with the interviewee being the central dispatcher of tasks. Not the entire stadium has access to the app in order to avoid misuse. The non-facilities staff therefore inform the interviewee about issues and he then delegate these tasks through the app.

External visitors report malfunctions during the events through the security staff and supervisors across the venue. Couple of hundreds of volunteers are also involved in matchday roll out. 90% of complaints we receive from the visitors reach the interviewee on time while 10% arrive the days after the match through email.

4.3.2 Conclusions and potential improvements

Food & Beverage

Food and beverage are sourced, and the service is planned in a very sustainable manner avoiding overproduction and food waste. However, the serving still includes single use products (recyclable and compostable, though).

The interviewer concluded the following:

- ⚙ Sustainability teams hired by the contractor who do site visits with the Croke Park employees and provide reports
- ⚙ Impressive portion and food quantity planning for avoiding waste
- ⚙ Operations depend on data collection and management
- ⚙ Remarkable food tracing: all products are local or national and the producers are visited on a regular basis
- ⚙ Cutlery, crockery and cups are compostable or recyclable
- ⚙ Flexibility to amend contract and rediscuss the service
- ⚙ Single use cups and certain products still in use
- ⚙ Vegan and vegetarian option available only in VIP areas
- ⚙ Food donation isn't possible due to HACCP regulations
- ⚙ External communication/advertising doesn't exist on matchdays; good things to highlight but missing the opportunity
- ⚙ The new contract to be signed this month but not aware of the new criteria

Mobility

Generally, there is a gap and lack of communication and consultation between the local authorities and large venue such as Croke Park. While the authorities are developing certain plans (either enhancing cycling or deterring drivers from using private vehicles in the city), certain things are turning unsustainable or a nuisance for the local communities such as illegal parking and increased number of buses in the city.

The interviewer concluded the following:

- ⚙ A lack of any strategy that targets mobility often requires repetitive actions and meetings
- ⚙ There are evident conflicts created by certain policies which don't necessarily reflect the needs of large venues
- ⚙ Collaboration with other stakeholders is significant and proven to work
- ⚙ Good social responsibility reflected in accessibility
- ⚙ Local visitors can benefit from a set of enabling factors such as a bike park, shared bikes, charging stations, cycling lanes etc. but the away visitors are quite disadvantaged, what provokes nuisances for the city authorities, police and local communities

Circular economy assessment report: *Qualitative and quantitative assessment of the participating sport organisations circular economy and environmental performances*

- ⚙ Significant data on mobility which could be used for monitoring purposes exists, but its collection or storage isn't centralised
- ⚙ A survey targeting the external visitors (both Co. Dublin and beyond) would be necessary in order to understand their challenges and collect potential improvement ideas
- ⚙ A gap between the stadium's practices and needs and the objectives and the policies of the local authorities is something to be addressed

Purchasing

Purchasing at Croke Park has a solid and well implemented system and a difference is made for different projects with different objectives – continuous (such as maintenance) and single project (such as investments in new features or systems). Tender processes are used for significant projects while contracts are signed with suppliers and contractors for continuous service.

The stadium does very little research itself and relies on the suppliers to flag advanced and more environment friendly products or technology as well as new policies. The mentioned investments and improvements, such as reusable cups, rainwater harvesting and similar could be of a great interest for the ACCESS project.

The interviewer concluded the following:

- ⚙ The purchasing team hold regular meeting with the contractors to ensure that the standards are maintained and get updated on new products on the market
- ⚙ The contractors prepare documents indicating what solutions, products, technologies etc. exist out there
- ⚙ Contracts are 3 years long with the contractors who are in-situ
- ⚙ The team looks at certifications and accreditations of contractors and suppliers
- ⚙ Several infrastructural projects in the pipeline – rainwater harvesting, solar panels, single use cups
- ⚙ Croke Park organises trainings/briefings for contractors to explain them the zero waste policy and other policies in place
- ⚙ Croke Park participates financially in DCC efforts to clean up beyond the stadium perimeter
- ⚙ Croke Park doesn't necessarily look for new and updated regulation but waits for the contractors to flag them
- ⚙ The Croke Park purchasing/procurement department only directly procures sanitary consumables and daily maintenance items
- ⚙ No initiatives regarding sustainable/organic cleaning services, pitch management products and similar items – doesn't get as much attention as it should. More inclined towards safety than environment.
- ⚙ Croke Park doesn't have its own KPIs but this monitoring process is done by SGS for ISO.

Waste management

Solid waste management practices and procedures, followed by data collection and well-defined handling and treatment of various waste streams. Targets exist in form of objectives and aims, but the KPI system or medium-term goals are lacking for ensuring periodical achievements.

Still a certain share of single use products, mainly cups. Certainly, something to look at. In terms of waste production, we should look at the monthly data and identify trends or possible improvements and/or run tests.

The interviewer concluded the following:

- ⚙ Waste separation, collection, treatment is well set up and seem to work based on internal policies and procedures
- ⚙ Good partnership with waste companies

- ⚙ Perhaps a better understanding of local policies and waste streams could be useful (local/regional targets)
- ⚙ Good cooperation with the city council, but only what concerns them are outside the stadium perimeter

Infrastructure and maintenance

Infrastructure maintenance has a solid and well implemented system which is based on prioritisation and avoidance of reactive and urgent interventions. This is reflected in annual plans made for the board. The call for offers and evaluations are based on scoring and weighing which equally include environmental provisions. However, I had the impression that the evaluations don't include any major environmental requests or benchmarks for even more advanced scoring.

Day to day maintenance as well as matchday maintenance are enhanced with innovative and tailor-made technology which allows timely reactions, appropriate task allocation and swift delivery. Like every technology, the tool is a source of data. As the tool has been in use only 6-7 months, no monitoring system or evaluation system accompany it, just yet.

For the ACCESS project, the fact that the next annual plan would be made prior to September, it would be interesting to explore improving the environmental sustainability of the existing infrastructure or investing in new features. The existing call for offers could also be investigated for potential cross checks. Particular interest lies in the app, too, as the project could provide a monitoring system to maximise to use of the app.

Reusable cups were mentioned again, something to explore as an ACCESS activity.

For the good practices collection, the app could surely find its place among other practices (perhaps coupled with the Kappture app).

The interviewer concluded the following:

- ⚙ Annual plans to identify priorities and budgets and minimise reactive interventions
- ⚙ Environmental provisions are a part of the scoring system, but appropriate scoring and comparison might be missing (benchmarking, LCA analysis ...)
- ⚙ Exemplary inclusion of ecosystem and wildlife features in buildings
- ⚙ Exemplary use of technology which could be enhanced with data monitoring and evaluation system (certain repetitive actions could indicate larger interventions/investments)
- ⚙ No communication with local authorities in terms of potential contribution to local strategies

4.3.3 Circular City Committee Outlooks

Food and Beverage

The new contract could (have) serve(d) as a good opportunity to review and improve certain aspects; potential amendments

Introduction of reusable cups/cutlery/crockery

Improving the image of Croke Park by highlighting the sustainable and responsible food and beverage management

Mobility

A good starting point exists, as many local stakeholders already partake in planning phases

A survey targeting visitors could be beneficial for understanding their needs and wishes

Better collection and centralisation of data could contribute to better planning

Facilitating the arrival of visitors from outside Co. Dublin requires solutions

Analysis of available large capacity car parks or large surfaces for temporary bus parks

Identifications of private car parks (shopping centres, factories) that could be rented on weekends or after working hours

Purchasing

A merger/collab with the food and beverage outlooks on reusable cups

A merger/collab with the infrastructure outlooks on rainwater harvesting and solar panels

Waste Management

A merger/collab with the food and beverage practices and purchase for the reusable cups

Exploring making use of the data

Infrastructure and maintenance

A merger/collab with the infrastructure outlooks (yet to come) on rainwater harvesting and solar panels investments.

Exploring improving the app (monitoring feature)

Improving the environmental assessment of tender documents

4.3.4 Applied KPI Assessment

The tool was first applied through interviews with various GAA staff responsible for various fields of operations and processes and, subsequently, to make the assessment even more concrete, a case study description approach was used. More precisely, the interviews took place in January and February 2023, online, followed by a site visit on 30 March 2023. The secondary assessment, using the KPI tool was completed in August 2023, as it wasn't available at the time of the study visit yet. The results obtained for each section are shown below. Important note to be highlighted is that the GAA doesn't have its own team but is an association of individual GAA clubs across Ireland. Therefore, the GAA does not deal with any accommodation arrangements. This is why the accommodation assessment is left out in the case of GAA.

Food and Beverage 79%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is the aspect food & beverages and related environmental impacts mentioned in your sustainability strategy or environmental policy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Not at the moment, but we are implementing it for the next version C) No, we do not have a sustainability strategy	A	1

Do you keep track of data about the food & beverages activities (amount of food consumed in the VIP area, amount of food consumed in bar & kiosks, amount of beverage consumed, etc.)?	A) Yes, we have implemented a monitoring system and we have all data regarding food and beverages activities B) Yes, we have a monitoring system, but some data regarding food beverages activities are still missing out C) We are working to develop a monitoring system which now is not in place (evidence must be shown) D) It has never been evaluated	A	1
Have you ever assessed the relevance of food and beverage originated by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint B) We are collecting data to assess accommodation's impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.66
Have your employees (staff/players) received information on food and beverages sustainability?	N. of employees trained on food beverage sustainability /no. of match-day personnel dealing directly with food and beverage	50%	0.5
Do you use signage, communication channels or other approaches for highlighting more sustainable food and beverage options you may be offering?	A) Bar, kiosks and catering services regularly highlight the more sustainable option B) There is only some generic info in the bar/kiosks/VIP area C) No signage, communication channels or other approaches	B	0.5
How frequently do you evaluate fans' awareness of the environmental impacts of food and beverages choices during matches?	A) We carried out a reliable survey at least one time per year B) We carried out a reliable survey at least one time every three years C) It has never been evaluated	A	1
Do you require environmental and sustainability-related criteria (such as the use of non-plastic cups, compostable objects etc.) in your call for offers and tenders when it comes to food and beverage activities?	A) We have developed a food and beverage minimum environmental criteria that contractors/suppliers must comply with (must have) B) We have developed a food and beverage minimum environmental criteria that contractors/suppliers are suggested to comply with (nice to have) C) We are working on such criteria D) It has never been evaluated	B	0.66
Have you implemented food and beverages sustainable improvement actions (compostable cutlery, reusable cups, vegetarian/vegan menus, refill stations, elimination of single use products, locally sourced food, etc.) for your matches/events?	A) We have implemented at least one sustainable action compared to the previous year/situation and we have already planned to implement another one in the next three year B) We have implemented one sustainable action compared to the previous year/situation C) We have not implemented any action, but we are working on it (evidence must be shown) D) It has never been evaluated	A	1
How much resources have you invested to achieve improvement actions in the field of sustainable food and beverages?	A) More than 10% increase of the economic/human resources foreseen for food and beverages B) Less than 10% increase of the economic/human resources foreseen for food and beverages C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	B	0.66

Have you ever involved your food & beverages contractors in environmental training/information (e.g., on how to manage waste produced in the kitchens)?	N° of food and beverages contractors trained in environmental topics / total N° of food and beverages contractors in all the events/matches in the year	50%	0.5
Has the organisation put in place collaborations with the municipality and other city actors, for the delivery of food beverage in home matches/events?	A) There are set collaborations with the city actors to deliver local/environmentally friendly food and beverages B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1
Are you in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection)?	A) There are set agreements to discuss/coordinate actions to manage the waste produced by food and beverages activities and to improve waste collection B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1

Food and beverage supply, service, management and disposal have been proven to be exemplary in case of the GAA and their Croke Park during the interviews already, followed by a site visit which allowed the project's technical partner, ACR+, to talk to relevant people responsible for these operations.

The great advantage of the Croke Park stadium (home of the major GAA games, located in Dublin) is that the food and beverage is served strictly inside the stadium perimeter and allows exemplary food preparation, servings and food waste management.

While the entire process is subcontracted to an external company who oversees this operation not only for games, but also concerts, conferences and other corporate events. Therefore, the good average score can be transposed onto other events at the stadium, too.

In terms of quantification, these operations scored a considerable score of 77.67%.

The fact that food and beverage operations are included in the stadium's sustainable strategy/policy further leads to other aspects being covered properly by appropriate practices, such as monitoring and tracking of the food, continuously improving the environmental performance of these operations and having other initiatives in the pipeline. Important aspect to highlight here is the fact that the strategic approach is also reflected in having minimum criteria and expectations of environmental performance from the caterers.

The subcontractor, when interviewed reported the use of a sophisticated tool which allows them to manage the food supply, delivery and stocks management responsibly and according to the needs. The tool allows easy and up to date overview of different locations where the food is served what enables the subcontractor to manage and quickly use the food that had been unfrozen, prepared and ready for serving, preventing overconsumption of ingredients and resources. The tool also allows them to optimize portions and the use of leftover ingredients.

The collaboration with the subcontractor is evident, as continuous trainings, meetings, and improvements are suggested. This was also reported during the interview phase. The subcontractor itself, as the interview showed, has its own environmental and sustainable criteria, which brings an added value to the stadium's aspirations and expectations.

The involvement of visitors in a sustainable food and beverage management also requires a praise as the stadium and the subcontractors are putting certain efforts in involving them in the process through signage, and user satisfaction surveys.

When it comes to the cooperation with the local authority and other local and regional stakeholders (private or public), the stadium can be considered exemplary when it comes to ensuring responsible and sustainable management of food and beverage operations. The waste management company selected for the collection and treatment of food waste was carefully chosen in order to secure appropriate treatment of that kind of waste.

The site visit and the interviews did show some improvement potential that could be addressed through the future phases of the project such as the replacement of single use cups with reusable cups – a practice already existing elsewhere and with many solution providers available. Including this in the call of offers or imposing it on current operations could considerably improve the environmental performance of the food and beverage serving operations. A relevant signage and instructions through a communication campaign could help considerably in making the visitors aware of this practice and providing them with appropriate instructions.

Mobility 48.80%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Have you ever monitored the sustainability of fans mobility in home/away matches?	A) We have developed a system to track and monitor fans mobility B) We have identified the monitoring system, but we have not yet started tracking fans mobility C) We are still discussing this possibility at internal levels D) It has never been evaluated	B	0.66
If yes, what is the percentage of fans who use sustainable means of transport (e.g., bikes, public transport, walking, sharing, etc.) to reach the venue?	A) Over 75% of the fans use sustainable means of transport B) Over 50% of the fans use sustainable means of transport C) Over 25% of the fans use sustainable means of transport D) Less than 25% of the fans use sustainable means of transport E) It has never been evaluated	B	0.75
If yes, how frequently do you evaluate fans' mobility?	A) We carried out a reliable survey at least one time per year A) We carried out a reliable survey at least one time every three years B) We are discussing this possibility C) It has never been evaluated	A	1
If yes, have you ever quantified the relevance of mobility originated by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment B) We carried out a carbon footprint + we collect quantitative environmental data C) It has never been evaluated	C	0
Have you ever received requests by your supporters about their mobility needs (e.g., official requests from supporters' club, email, oral requests, etc.)	A) There are specific opportunities for supporters to provide their feedback on green mobility B) We decided to give supporters the possibility to provide us suggestions, but we have not yet implemented a system C) We are still discussing this possibility at internal level D) It has never been evaluated	D	0

What is the percentage of employees who use sustainable means of transport (e.g., bikes, public transport, walking, sharing, etc.) to reach the workplace?	A) Over 75% of the employees use sustainable means of transport B) Over 50% of the employees use sustainable means of transport C) Over 25% of the employees use sustainable means of transport D) Less than 25% of the employees use sustainable means of transport E) It has never been evaluated	D	0.25
How much resources have you invested to achieve improvement actions in the field of sustainable mobility of fans and employees?	A) More than 10% increase of the economic/human resources foreseen for green mobility B) Less than 10% increase of the economic/human resources foreseen for green mobility C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	B	0.66
Have your employees (staff/players) received awareness raising actions on green mobility?	N. of employees subjected to awareness raising action on green mobility/ Total N. of employees	75%	0.75
Have your drivers received information on green mobility?	N. of drivers who received information on green mobility / Total N. of employees	0%	0
Do you organise awareness raising events on green mobility targeting your fans?	A) We carried out at least two awareness raising events on green mobility targeting fans B) We have already planned the event, but we have not yet carried out it C) We are still discussing internally the possibility of organising awareness raising actions on green mobility D) It has never been evaluated	A	1
Have you considered green criteria (Euro 6, methane, electric) in the selection of means of transportation for your players, staff, etc.?	A) Over 75% of the travels consider green criteria B) Over 50% of the travels consider green criteria C) Over 25% of the travels consider green criteria D) Less than 25% of the travels consider green criteria E) No green criteria are considered in the selection of the means of transportation	E	0
Do you have in place initiatives related to sustainable mobility of supporters with city actors (ticket of bus paid or discounted with ticket of match, free shuttles from train stations, increase number of trains etc.)?	A) We have developed such initiatives B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1
Do you favour the use of bikes during match days, in collaboration with municipality? (such as by having a bike parking in the proximity of the stadium or a stadium achieved by bike lanes?)	A) We have set specific initiatives to favour the use of bikes during the matches in collaboration with the municipality B) We have set specific initiatives to favour the use of bikes during the matches (without the involvement of the municipality) C) We are still discussing internally this possibility D) It has never been evaluated	A	1

Do you have municipality electric bikes/bikes/push scooter sharing station close to the stadium?	A) Yes B) We have requested to the competent authorities to install them C) We are still in the planning phase D) No	A	1
Do you have electric cars recharging stations in the neighbouring of the stadium?	A) Yes B) We have requested to the competent authorities to install them C) We are still in the planning phase D) No	D	0
Do you offset the carbon emission connected with mobility?	A) Yes, we offset all the carbon emission connected with green mobility B) Only partially or we are discussing and planning this possibility C) No	C	0

The mobility at Croke Park, the home stadium of the GAA where major games are taking place, has a very specific circumstance. The stadium can't be considered as a home ground for any of the GAA teams as it serves as the venue for major final tournaments. The exception is Dublin GAA which can be considered as a local team, but the stadium is not necessarily their home ground.

Therefore, the mobility aspects of Croke Park revolve around teams making it to the finals and visiting the stadium as away supporters. Therefore, the mobility needs to be taken with this special remark.

Therefore, the overall score of the assessment is slightly below 50%, at 47.73%, due to these circumstances.

The overall objective of a reasonably good mobility management is to secure the arrival and the departure of visiting supporters. And we can easily talk about half a dozen thousands of visitors in case of the finals of the top tiers.

The arrival of visiting supporters takes place either by coaches or private vehicles. The assessment shows that the GAA and Croke Park pay attention to mobility patterns and regularly monitors, survey and do awareness raising actions which could lead to more sustainable mobility patterns. The assessment and the interviews also showed that a regular cooperation with public authorities (Transport for Ireland, Dublin City Council) as well as the police forces help a lot when it comes to these efforts. This cooperation helps the stadium and GAA to understand the hotspots, and the key pressure the arrival of visitors has on the urban environment in terms of various nuisances - noise, traffic jam and air pollution. Such intelligence and insight help the event organisers and the local authorities (including police) to better organise the arrivals and departures of visitors.

The assessment further shows that although the stadium and the GAA with their local authorities are trying to facilitate the arrival and departure of visitors, not much information from the visitors and their needs and expectations reach them.

When it comes to the local mobility of staff and visitors from the Dublin area, there are several enabling options for a more sustainable mobility, including access by soft mobility (bikes, shared bikes, public transportation). Nevertheless, the assessment shows that soft mobility is less favoured among the staff.

In terms of improvements, a better dialogue between the stadium, local authorities and the visiting clubs could be reinforced in order to find a balance and eliminate various nuisances. The interviews and the site visit resulted in several ideas of multimodal mobility – arriving on the outskirts of Dublin by coaches or private vehicles and continuing by public transportation, reinforced during peak hours (before and after games, weekends etc.).

Purchasing and supplier selection: 61.58%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is the aspect on sustainable procurement and a sustainable supply chain and related environmental impacts mentioned in your sustainability strategy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Yes, it is mentioned but it is not evaluated in detail C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability strategy	A	1
Do you take into account green criteria for purchasing and the selection of suppliers?	A) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, they are binding criteria and we consider them in purchasing and in the ranking for the selection of suppliers (must have) B) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, but such criteria are not binding for purchasing and the selection of suppliers (nice to have) C) We are working on it (evidences must be shown) D) It has never been evaluated	B	0.66
How many suppliers are covered with environmental certifications?	N. of suppliers (relevant from an environmental perspective) with at least an environmental certification (at organisational level)/ Total N. of suppliers	50%	0.5
How many fertilisers you purchase are covered with environmental certifications?	% of organic fertilizers	50%	
How many cleaning products you purchase are covered with environmental certifications?	€ of purchased green cleaning products / Total € of purchased cleaning products	75%	0.75
Have you ever carried out on-site audits evaluating the suppliers' environmental management (against your sustainability criteria, in their facilities and during matches)?	N. of suppliers (relevant from an environmental perspective) audited (in their facilities, during matches, etc.)/ Total N. of suppliers	50%	0.5
Have you ever assessed the relevance of your suppliers in terms of environmental impact?	A) We have considered them in quantitative evaluation metrics (such as LCA) B) We are collecting data to assess suppliers' impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.5
Have you ever assessed the relevance of the products/materials you purchase in terms of environmental impact?	A) We have considered them in quantitative evaluation metrics (such as LCA) B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.5

Have you ever involved your suppliers in environmental and circular economy training regarding their activities (e.g., on how to manage waste produced during events, etc.)?	N. of suppliers involved in environmental and circular economy training / Total N. of suppliers with relevant environmental impacts	50%	0.5
Have you ever received sustainability requests by your staff/players about their purchasing and suppliers needs?	A) We are receiving suggestions from staff/players on green purchasing and supplier selection B) We have created a specific channel (green whistleblowing) to give staff/players the possibility to provide suggestions, but it has never been used C) We are still internally discussing this possibility D) It has never been evaluated	D	0
How much resources have you invested to achieve improvement actions in the field of sustainable and circular purchasing and supplier selection?	A) More than 10% increase of the economic/human resources foreseen for sustainable and circular purchasing and supplier selection B) Less than 10% increase of the economic/human resources foreseen for sustainable and circular purchasing and supplier selection C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	B	0.66
Do you have a list of local suppliers?	A) Yes, we defined a list of local suppliers B) We are currently collecting information to create the list of local suppliers C) We are still internally discussing this possibility D) It has never been evaluated	A	1
Do you purchase locally (products/materials produced in the same region where it is needed)?	nr. of local suppliers / total nr. of suppliers	50%	0.5

Just like in case other environmental performances, the GAA and Croke Park have a considerably good score in this field, too – especially compared to other sport organisations.

The remark that has to be made at the beginning of this assessment is the following, as reported during the interviews and the discussions during the site visit. The GAA operates in Ireland, which is an island and thus the availability of certain products, equipment, goods and services is to some extent limited and need to be procured or purchased from elsewhere.

Nevertheless, the strong environmental commitment the GAA and Croke Park have which is reflected through their policies and strategies show that those aspirations are implemented in supply chains and purchasing procedures, too. The interviews and the KPI assessment showed that responsible and environmentally sound procurement at GAA is based on the sustainability strategy and appropriate criteria for evaluating the offers which are respected and taken into consideration to a considerable extent. The procurement and purchase of various material such as for pitch maintenance or cleaning products follow the suit.

Securing suppliers of environmentally friendly products and services helps GAA to maintain a list of proven and local suppliers. However, as mentioned, the interviews also reported that certain good need to be purchased and shipped from overseas.

The GAA and Croke park also maintain regular contacts and have meetings with the suppliers and contractors in order to identify improvement potentials and improve overall environmental performance.

With all these limitations but also good practices, the GAA and Croke Park reported better performances than other sport organisations with 58.92% good environmental performance.

Waste management: 92.13

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is waste management mentioned in your sustainability strategy/policy?	A) Yes, it is mentioned and evaluated in quantitative terms B) Yes, it is mentioned and evaluated in qualitative terms C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability/policy strategy	A	1
When establishing your waste management goals, do you take into account the policy priorities of your city?	A) Yes, we have discussed and shared the objectives with representatives of the municipality B) Yes, we are aware of the municipality's waste goals because we consult their waste policy documents C) Yes, but without careful verification D) No	A	1
If you have a policy, how much of your waste management objectives reflect the targets of your local/regional authority? (waste prevention, increasing overall recycling rates, elimination of certain items or material, landfill diversion targets, separate waste collection rates, carbon targets, reduction of food waste)	% of objectives consistent with the city's priorities	100%	1
How often are you in contact with your relevant local/regional waste authorities for understanding the new priorities and targets?	A) At least once every year B) Periodically, but without a defined timeframe C) We are not in contact with such authorities	A	1

Do you keep track of data about waste management (amount of waste produced in the stadium/event, percentage of recovery/recycling/landfill according to waste management indicators of your city/region, etc), through a system of performance indicators?	A) Yes, we have implemented a monitoring system and we have all data regarding waste B) Yes, we have a monitoring system, but some data regarding waste are still missing out C) We are working to develop a monitoring system which now is not in place (evidences must be shown) D) It has never been evaluated	A	1
Has the organisation clearly defined which actors (the organisation itself, the suppliers, the municipality, the waste management operator, etc.) are in charge of waste collection during matches/sport events (inside/outside the stadium)?	A) All situations are clearly identified by the organisation in advanced and the actors in charge appointed without any issue B) All situations are clearly identified, but sometimes there is uncertainty on who should be in charge of waste management and misalignments might happen C) It has never been evaluated by the organisation, since other actors take care of waste management	A	1
Do you carry out during the match some on-site visits around and inside the stadium in order to understand issues related to waste management? For example: need of bins (in case of separate waste collection, etc.)?	n. of matches/sport events where waste management is checked through on-site visits / n. of matches/sport events	100%	1
Have you ever assessed the relevance of the waste produced by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint considering waste data B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.5
Have your employees (staff/players) received information on waste management?	N. of employees subjected to awareness raising action on waste management / Total N. of employees	100%	1
Have your employees (who work directly with waste) received information on waste management?	N. of employees who work directly with waste trained on waste management / Total N. of employees who work directly with waste	100%	1
How many awareness raising activities/events on waste management environmental impacts targeting your fans have you organized?	A) At two least two awareness raising activities B) One awareness raising activity C) No awareness raising activities	A	1
How frequently do you evaluate fans' awareness of the environmental impacts of waste management choices during your matches?	A) We carried out a reliable survey at least one time per year A) We carried out a reliable survey at least one time every three years B) We are planning C) It has never been evaluated	A	1

Have you implemented waste management improvement actions (waste collection signals, separate collection, take-back systems, etc.) for your matches/events?	A) We have implemented at least two sustainable actions compared to the previous year/situation B) We have implemented one sustainable action compared to the previous year/situation C) We have not implemented any action, but we are working on it (evidence must be shown) D) It has never been evaluated	B	0.66
Do you donate the leftover food to local city actors (e.g., caritas, parishes, etc.)? Or use other approaches to avoid the food waste (Too Good to Go, for example)	<i>Nr. of matches with food donation / Total nr. of matches</i>	0%	0
If you do not donate the leftover food, does the organic waste go to composting facilities inside the city?	A) Organic waste is composted inside the stadium facility B) Organic waste goes to composting facilities within the city C) Organic waste goes to composting facilities outside the city D) We have unsorted collection/we do not know	B	0.66
Are you in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection)?	A) There are set agreements to discuss/coordinate actions to manage the waste produced outside the stadium and to improve waste collection B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1

The overall score of 92% the GAA's waste management assessment only proves and confirms what was reported during the interviews and the site visit. A waste management nearly impeccable for a stadium, with a very responsible and sound waste management in place – where each waste stream gets the treatment it needs.

The stadium has an exemplary waste collection system in the first place which includes storage and careful separation either at the source or secondary separation. The stadium invests in continuously improving the system and owns its own compactors for paper, plastic and other recyclables – what helps with the storage and also decreases the waste management fees.

Furthermore, the treatment of various streams follows the strategy and the targets of the city of Dublin and such a responsible waste management greatly contributes to these efforts.

Data collection and monitoring play an important role and receive attention in order to be able to continuously improve the processes and operations. This is a result of an exemplary cooperation with the contractors who provide figures and who were chosen carefully to secure proper waste treatment for various streams.

In terms of communication, awareness raising and visitors' involvement, this is an ongoing practice with trainings, briefing and other activities happening regularly. Therefore, a participation of various groups is secured to contribute to the cause.

The only limitation the stadium has is the donation of the food, which is not allowed, but nevertheless food waste is treated with the most advanced options and mainly composting within the city limits.

Infrastructure and maintenance: 58.91%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Are sport facilities and stadium infrastructures (Please see Stadium infrastructures guidelines of UEFA for a definition) mentioned in your sustainability strategy/policy?	A) Yes, they are mentioned and evaluated in quantitative terms B) Yes, they are mentioned and evaluated in qualitative terms C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability/policy strategy	B	0.66
When establishing your stadium infrastructure goals, do you take into account the policy priorities of your city?	A) Yes, we have discussed and shared the objectives with representatives of the municipality B) Yes, we are aware of the municipality's waste goals because we consult their waste policy documents C) Yes, but without careful verification D) No	B	0.66
If you have a policy, how much of your stadium infrastructures objectives reflect the targets of your local/regional authority?	% of objectives consistent with the city's priorities	50%	0.5
How often are you in contact with your relevant local/regional authorities for understanding the new priorities and targets related to stadium infrastructure and sport facilities?	A) At least once every year B) Periodically, but without a defined timeframe C) We are not in contact with such authorities	A	1
Do you have a maintenance management system for infrastructural improvement interventions with regard to sustainability?	A) Yes, we have implemented a maintenance management system, with KPIs, and we set sustainability criteria and objectives B) Yes, we have a maintenance management system, but without clear and defined sustainability criteria, KPIs and objectives C) it has never been evaluated	B	0.5
In case of new building or infrastructures, have you defined sustainability criteria and objectives to integrate in their design (eco-design) and development?	A) Yes, we have set clear sustainability criteria and objectives, which are mandatory (must have) B) Yes, we have set clear sustainability criteria and objectives, but they are not mandatory (nice to have) C) it has never been evaluated	A	1
Have you ever assessed the relevance of the stadium infrastructures and sport facilities in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint (or similar quantitative metrics) B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.66
Have your employees (staff/players/coaches) received information on sustainable management of	N. of employees trained on sustainable management of stadium infrastructure and sport facilities / Total N. of employees who work on stadium infrastructure	50%	0.5

stadium infrastructures and sport facilities?			
How many awareness raising activities/events on stadium infrastructures and sport facilities environmental impacts targeting your staff (employees, players, coaches, etc.) have you organized?	A) At two least two awareness raising activities B) One awareness raising activity C) No awareness raising activities	A	1
In case of ownership of the stadium by a city actor (e.g., municipality), have you set and implemented with the actor sustainability improvement actions regarding the stadium infrastructure?	A) There are set and joint agreements with the city actor to improve the sustainability of the stadium infrastructure B) We are currently working on it (evidence must be shown) C) It has never been evaluated	n/a	n/a
Even if you are the owner of the stadium, have you set and implemented with the city actors (i.e., municipality) sustainability improvement actions regarding the stadium infrastructure?	A) There are set agreements with the city actors to improve the sustainability of the stadium infrastructure B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	D	0
Have you ever offset your carbon emissions linked with the use of sport facilities and stadium infrastructures?	% of offset carbon emissions connected with sport facilities and stadium infrastructures	0.00%	0

As mentioned before, Croke Park is the home for the final major games of the GAA. It is the third largest stadium in Europe after Nou Camp in Barcelona and Wembley in London. A large stadium in the vicinity of Dublin's city centre, it certainly requires responsible infrastructure and facility management.

Therefore, maintaining such a big venue requires a lot of resources and responsiveness, especially if one takes into consideration that the same stadium is also used for concerts, conferences and other corporate events. Nevertheless, the stadium management has in place several exemplary practices which make the maintenance of the venue well performing.

The infrastructure maintenance scored 58.91% at the assessment.

When it comes to the stadium and other infrastructure, the cooperation with the public authorities is somewhat to a lesser extent than in case of waste management for instance. The stadium is managed by a company that exists for that purpose, and is therefore managed privately, independent from other public entities. Nevertheless, the stadium does follow certain standards and is in touch when undertaking infrastructural projects (renovations, building new infrastructure etc.). The stadium has its own standards and policies which are a part of a bigger sustainability strategy and therefore, together with the contractors.

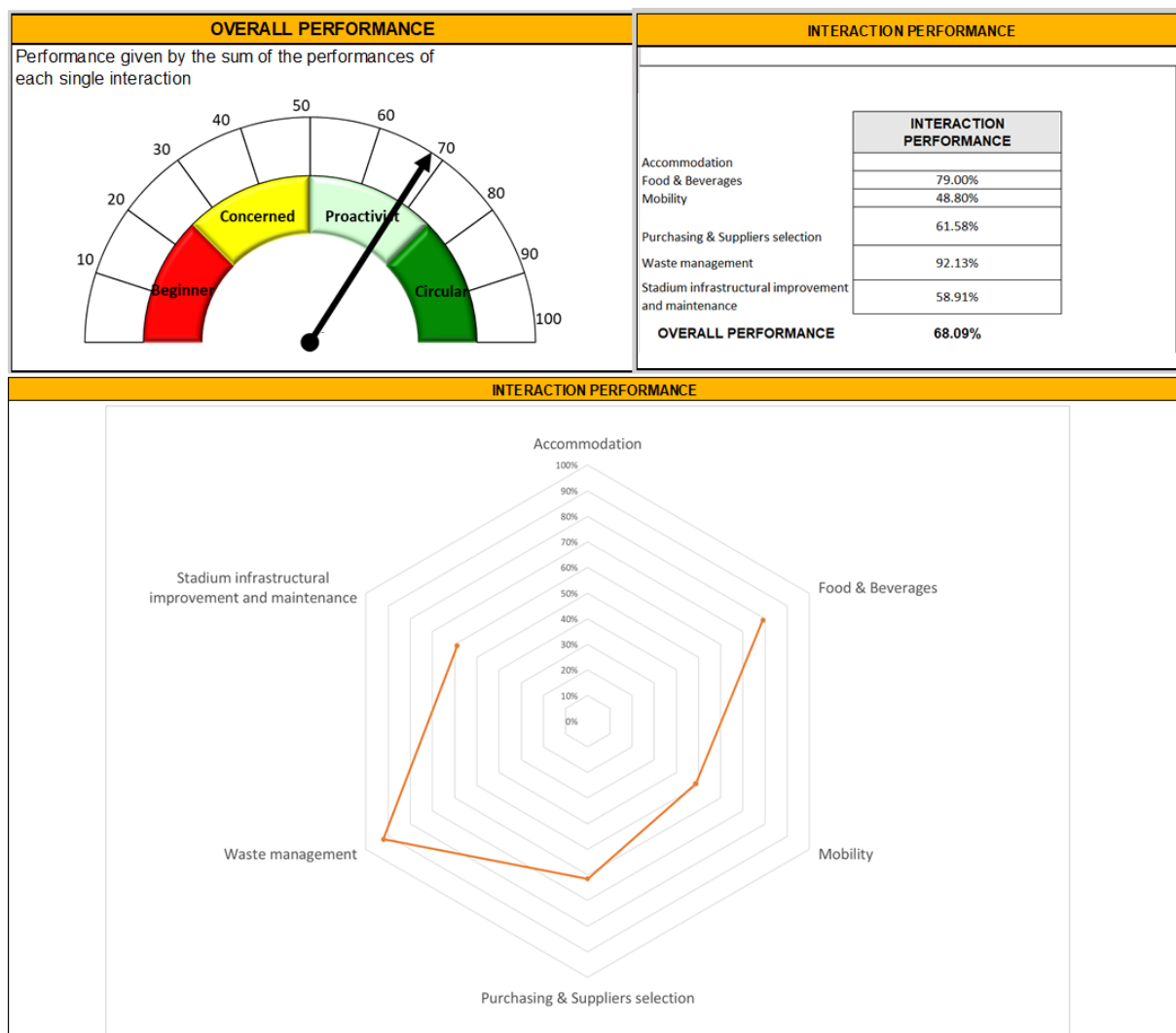
The key challenge and objective when it comes to maintenance and management is to be as reactive as possible in terms of a damage or a malfunction in order to avoid further damage (power cut, clogged drains or sewers, leaks in bathrooms/toilets, broken bulbs, lights etc.). The stadium developed a mobile app which now centralises all the spotted malfunctions and damages and signals the maintenance team where to react fast. The app also makes a record of these malfunctions which allows to identify recurring malfunctions and damages.

The employees are aware of the app, and they are using it after having received a training on it and testing the app during the testing phase.

Worth mentioning here is that although Croke Park requires large scale maintenance and resources to upkeep it, the GAA has its other facilities and infrastructure across the island which are managed on a smaller scale and certainly have an environmental performance less impactful than an 80.000 seater.

4.3.5 Overall results

Following the presentation of the results, the style of performance of the GAA and its stadium in terms of circularity is a very exemplary advanced proactivist. As a reminder, the accommodation aspect could not be assessed as the GAA.



The circularity performances are represented both through a speedometer, which serves to present the overall performances, and through a target graph, which serves to represent the performances for each phase.

Taking all the various circumstances into consideration, one could see that the GAA has an environmental management nearly above average in all fields of activities and operations and can be even considered more than exemplary in some of them – especially those which are about direct management of the infrastructure and events.

If we look at the least performing – mobility, a simple explanation can be found, as already mentioned in the respective chapter. The fact the GAA and the stadium don't have a "home team", nor a national team that they would be in charge of, makes the mobility operation somewhat more complicated due to the fact that as many as 80.000 visitors could be coming from outside Dublin. This creates a large pressure on the event organiser to decrease the nuisances, traffic issues, air pollution and other disturbances locally. The GAA is known to Communicate all mobility arrangements in advance to the participating clubs and has regular meetings with the police forces and other relevant authorities. However, many challenges still exist, and this project will indeed try to look into solving some of them through enhanced collaboration with the authorities. The fact that another stadium could be experiencing similar issues would allow this challenge to be addresses as a join effort of various stadiums and event organisers in Ireland.

Other two, which are linked to some extents are procurement and supplier selection and infrastructure management. Here, the collaboration with the public authorities and stakeholders is less common as these operations are rather done internally, with internal discussion on what could/should be the best and with little consultation with external stakeholders (except contractors). Nevertheless, the club has many of these operations defined and covered with certain sustainability criteria and policies what makes them important processes for the overall environmental management of the stadium and the GAA. The interviews, the visit and the score showed that further reinforcement and application of these criteria could improve the performance.

The other two operations which scored very high and are indeed organised very well are food and beverage service and waste management. As mentioned earlier, the stadium has been having a very well defined and efficient waste, food, beverage management and they really evolved into something that could be considered as a best practice. One aspect that could be explored with the contractor is the replacement of single use cups with reusable ones. The other large stadium in Dublin did it 2 years ago, so an additional opportunity for cooperation could be considered.

Overall speaking, while the GAA has good environmental management of various operations in place, a further collaboration with the public authorities and agencies could be envisaged, as well as reinforcing internal strategic decision in the field of environment and sustainability. Quantifying certain operations and the results more could lead to a better monitoring system (of resources, waste, storing and more).

The following table summarizes in detail for each phase the number of indicators for which it was not possible to carry out an evaluation.

Interaction	Indicators not calculated due to unavailability of values
Accommodation	ALL
Food & Beverage	1
Mobility	/
Purchasing & Suppliers selection	/
Waste Management	/
Stadium Infrastructural improvement and maintenance	/

Throughout the interviews, the GAA was aware of the current drawbacks and it was reported that those would indeed make it to the next phase, where certain solutions would be discussed with various private and public stakeholders. These additional solutions and new practices could further improve the score and add up to the exemplary environmental management already.

Interaction	Possible improvements
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Accommodation	n/a
Food & Beverage	Improving the image of Croke Park by highlighting the sustainable and responsible food and beverage management
	Introduction of reusable cups/cutlery/crockery
Mobility	Analysis of available large capacity car parks or large surfaces for temporary bus parks + Identifications of private car parks (shopping centres, factories) that could be rented on weekends or after working hours
	A survey targeting visitors could be beneficial for understanding their needs and wishes
	Better collection and centralisation of data could contribute to better planning
Purchasing & Suppliers selection	A merger/collab with the food and beverage outlooks on reusable cups
	A merger/collab with the infrastructure outlooks on rainwater harvesting and solar panels
Waste Management	Exploring making use of the data
	A merger/collab with the food and beverage practices and purchase for the reusable cups
Stadium Infrastructural improvement and maintenance	A merger/collab with the infrastructure outlooks (yet to come) on rainwater harvesting and solar panels investments
	Exploring improving the app (monitoring feature)
	Improving the environmental assessment of tender documents

4.4 FOOTBALL ASSOCIATION OF WALES

4.4.1 Interview reports

Partner	FAW
Topic	Waste management
Interviewee	Wayne Nash
Position	Head of Operations, Cardiff City Stadium
Interviewer	Ernest Kovacs, ACR+
Date	01/02/2023
Duration	30 minutes

Roles and responsibilities

Wayne is the head of operations at Cardiff City stadium, and he reports to the chief executive at both the FC and FAW, Mark Evans. When it comes to the FC, he oversees safety, security, and regular ground maintenance.

All food and beverage matters are done by a contractor who does the entire catering. 3 years ago, it became a joint venture after 14 years of partnership.

Policy, mission and strategy

There is a waste management strategy, but it isn't a part of a larger sustainability policy, as it doesn't exist. It is updated annually.

A survey was conducted, as explained in the assessment chapter, which was an initiative of the Welsh League and included waste as an aspect.

In general, waste management is included in the operational plan. There are commitments registered with the council. Commitments include recycling plastic, cardboard and similar recyclables. Waste quantities aren't tracked but it could be an easy win to introduce.

The waste reports are supervised by the internal waste management policy and no negative feedback is received. No direct conversation was held with the authorities.

Assessment of waste management

The stadium picks dry metal recyclables and general waste. The waste management company comes when the containers are full. There is a dedicated room with the club's own containers. General waste, which is compacted, stays until the capacities are full. The collection frequency depends on the matches. Usually, collection takes place twice a month. There are 6 or 8 glass containers with a total capacity of 3 cubic metres. The larger compactor is 10 cubes. When they are collected, we get their weight. However, data is never collected and interpreted.

The recyclables get recycled, but the general waste goes to landfills or incinerated in Cardiff.

When it comes to visitors' experience and demands, the stadium does collect occasionally requests and comments on general cleanliness (toilets, concourses) through established channels like fan surveys, but they don't cover sustainability aspects.

The interviewee said the stadium was proud of the general cleanliness and they were scoring high on that aspect, including waste management. A lot of people are involved in these operations as a good welcoming environment is needed. Some areas need to be improved though, covered with appropriate policies.

At the moment, the stadium uses recyclable cups. The stadium looked at reusable cups but the company who provides food and beverage preferred not to use them, so the plastic cups were replaced with paper cups. Reusable cups would apparently provoke unnecessary work.

Planning

Planning happens occasionally, the operation plan is updated once a year. The local authorities would need to contact us in case of an issue such as building control or public cleanliness. These lie with the environmental department. If there was litter outside, they would contact us, too. These are the authorities' responsibilities.

The stadium would like to improve waste management performances in cooperation with the League and show more responsibility through tackling low hanging fruits.

Training

The stadium works with general information and things that are required from Wayne. Running regular trainings and similar activities would be a task of a specific position to take care of the waste issue properly. A cleaning manager would be a good addition.

Communication

Signage exists in the stadium, the team is only rolling out new bins. There are different coloured bins for different waste streams. The stadium focuses on primary separation. As a large bulk of the waste comes from matchdays, part of the improvement plan is to increase capacities and skills in cooperation with the League and through webinars to show responsibility for sustainability. Emblems and symbols could be provided to improve primary selection.

Partner	FAW
Topic	Food and beverage management
Interviewee	Wayne Nash
Position	Head of Operations, Cardiff City Stadium
Interviewer	Ernest Kovacs, ACR+
Date	01/02/2023
Duration	30 minutes

Roles and responsibilities

Wayne is the head of operations at Cardiff City stadium, and he reports to the chief executive at both the FC and FAW, Mark Evans. When it comes to the FC, he oversees safety, security, and regular ground maintenance.

All food and beverage matters are done by a contractor who does the entire catering. 3 years ago, it became a joint venture after 14 years of partnership.

Policy, mission, and strategy

According to the interviewee, the contractors have their own sustainability strategy which reflects local products and environmentally friendly food which are a part of their own policies. They have their own targets. In terms of figures, they don't report them to FAW/Cardiff City FC.

Generally speaking, the contractor has more to offer in terms of sustainability than what the stadium asks for. They are pushing for better practice instead of the stadium. They eliminated plastic cutlery and replaced them with wooden ones and paper.

Assessment of Food & Beverage

No data is available, as the contractor is doing its own business.

Part of the contractor's policy is to switch to locally produced food and local food chains.

Food waste is occasionally donated to food banks in cases where games are cancelled.

Planning

There are quarterly business reviews, but no more details were given on this.

Training

Nothing was said on this topic as the contractor employs its own staff.

Communication

Not many things are advertised when it comes to sustainability issues.

Partner	FAW
Topic	Purchase and supplier selection
Interviewee	Gareth Wallwork
Position	Head of Facilities
Interviewer	Ernest Kovacs, ACR+
Date	30/01/2023
Duration	45 minutes

Roles and responsibilities

Gareth has been working as Head of Facilities for the previous 4 months, as a new staff member, looking after the facilities and trainings centres. He is reporting to the chief operating officer, which was a vacancy at that moment.

Gareth's tasks include the purchase of a wide range of equipment and consumables for the facilities and the offices through contracts, tender documentations.

While FAW is buying the equipment and consumables, advice comes from the contractors and groundsmen in the north and the south. Equipment includes boilers among other. The training centres have more independent role for buying machinery, petrol, mowers and similar.

Policy, mission, and strategy

FAW has a framework which ensures the supplying is done according to standards and this is what the tender coordinator needs to look at.

The interviewee couldn't say more.

Assessment of infrastructure management

The purchasing framework and the respective platform is one approved nationally by Wales. It includes categories that certain companies can do. Companies need to upload documents in order to prove their competences. Furthermore, Sport Wales have criteria in their database, thus FAW can ask Sport Wales for those suppliers which meet certain environmental criteria.

Local supplies are a priority for FAW as they are the first ones being contacted. Maintenance and contracts are local, too. But the market sometimes prevents FAW from staying local.

Planning

The new FAW Strategy will certainly look at this. At the moment. FAW are using products that are available and used already for long time. FAW will probably be reviewing the products being procured.

In terms of planning and contacting authorities, Newport training centre is probably the best example as it is a shared land between FAW and the city council.

Training

FAW doesn't do provide any training or briefing to its suppliers. They rely rather on self-awareness. When it comes to innovations, a lot of products are changing rapidly and companies in different areas are trying to sell them.

Communication

Communicating the purchases and other good practices in this field is very rare.

Partner	FAW
Topic	Infrastructure and maintenance
Interviewee	Gareth Wallwork
Position	Head of Facilities
Interviewer	Ernest Kovacs, ACR+
Date	30/01/2023
Duration	45 minutes

Roles and responsibilities

Gareth has been working as Head of Facilities for the previous 4 months, as a new staff member, looking after the facilities and trainings centres. He is reporting to the chief operating officer, which was a vacancy at that moment.

The training grounds and facilities have a contract with local companies. They plan and do urgent maintenance, including reactive maintenance. All contractors report to FAW. Depending on the urgency, meetings are held with the contractors. Otherwise, quarterly reports are sent to FAW. There are some internal reports that FAW can run itself, such as those regarding heating.

Apart from the contractors, FAW has a consultant who looks after the facility developments. The consultant was involved in FAW's current building and assists with understanding the buildings features.

Policy, mission, and strategy

In terms of policies and mission, the fact that the FAW is hosted within a hotel resort (on a long-term lease) which includes the training grounds and a golf course. The hotel pays for the heating and water bills. In general, all the sustainability principles lie with the hotel resort.

The other two facilities FAW owns, in the north and the south of Wales, imply decision making and strategies made by the FAW. These are Dragon Park in Newport and Colliers Park in Wrexham. These are used for the youth teams.

On matchdays, FAW uses Cardiff City's stadium which belongs to the club.

Environmentally friendly improvements and requirements are reflected in tender processes.

Assessment of infrastructure management

A SWOT analysis was done for the Newport facilities which gave answers to necessary improvements. Priorities and needs were subsequently identified and be a part of a 2–3-year long strategy defining the timeframe and specific improvements which could include waste management, recycling improvements, consumption patterns and similar.

FAW's new sustainability plan which oversees a variety of operations and governance already gives some guidance in what should be done and general directions.

What concerns the training centre in Newport, it is shared with the local council as it includes additional facilities – fishing, cricket, football ground etc. The owner is Newport Live, the local sporting department. Everything needs to be run past them, as foreseen by the partnership project, therefore all lighting, parking and other features need to involve them.

One example of good practice that could be highlighted is the heating and lighting system which is based on energy saving principles – mainly automatic monitoring. This is coupled with heating measurements which gives clear indication on how much is saved. This applies to both Newport and Wrexham centres.

Planning

The fact that the FAW is located within a hotel resort means that the hotel is taking the lead in planning. They were considering fitting solar panels which would lower the bills. FAW encourages such investments. The FAW was considering a building extension and looking at better water management with water reservoirs, irrigation systems with the objective to decrease water consumption.

Tender processes are looking at those who have the right specifications and technology. Planned is an extension of the car park with charger for electric vehicles, for what concerns the HQ.

The other two venues will see improvements in the future. The tendering process needs to be defined. Ideas revolve around energy saving systems and similar approaches. The training centre in Wrexham is new, so the improvements would be focused on the one in Newport. It has numerous possibilities for environmentally friendly upgrades.

Planning in general relies on reviewing previous strategies and identification of good practices for the extensions at the HQ and in Newport.

Gareth confirmed that certain considerations towards local ecosystems and natural environment could be taken into consideration, too. The most obvious facility that could include such features is the HQ as there is a reservoir and wildlife in the vicinity. This could imply creation of flower beds and similar features. It could be included in sustainable water management with water recycling features which could be a result of a cooperation with a third party. Some of such features are even requested by laws, so an external expert could advise properly. Cardiff city council is the regulatory body.

Training

No trainings on this topic were organised before. However, Gareth confirmed that the FAW would like to identify it as a priority. Company safety, environmental safety and knowledge could be the topics. This could imply an involvement of an external organisation to do an online training for the entire staff.

Communication

Communication wise, the FAW considers this as an important aspect of facilities management. The training facilities are following the overall communication strategy which is reinforced with the communication managers. A wider background was being created – LinkedIn page, Instagram and other social media networks for showcasing FAW's activities. Not much material existed at that moment, but this would be something for the next phase.

Material that would be shared are both external and internal messages such as environmental improvements, deployment of the sustainability plan, cycle to work campaign and other messages.

4.4.2 Conclusions and potential improvements

Food & Beverage

The fact that the stadium belongs to another entity – Cardiff City FC, direct interventions are limited, and the environmental management of the stadium is left to the partner to be taken care of. Furthermore, the food and beverage management (supply and more) are managed by a contractor which is a third party to FAW which even more limits the interventions.

It was good to hear that the contractor has considerably good environmental practices which go beyond the stadium's requirements – some of them being locally sourced food, elimination of plastic cutlery and similar. However, I had the feeling that these reports are not entirely shared with those who are using the stadium, thus any environmental baseline or assessment is hard to be done.

The interviewer concluded the following:

- ⚙ The contractor has its own sustainability strategy
- ⚙ It looks hard to intervene from FAW's side as this is a third party entity
- ⚙ Some good practices in terms of environmental friendliness – way food is sourced, elimination of plastic cutlery
- ⚙ No communication activities to raise awareness among visitors.

Purchasing and suppliers' selection

Purchasing and supplier selection seems to be based on “business as usual” principles without many indicators showing more environmentally principles. The Environmental Strategy might change this course and improve the purchasing and tendering procedures. At the same time, the interviewee is new in this position so he couldn't give more detailed answers. Contacting the authorities could certainly help to improve purchasing processes for the start.

The interviewer concluded the following:

- ⚙ Purchasing seem to be based on a “business as usual” model
- ⚙ The Sustainability Strategy could open doors to improving purchasing and procurement at FAW Cardiff City Council and the Welsh Government have their own platforms, charters and guidelines for improved green procurement.
- ⚙ There are no indicators or monitoring which could say whether current purchasing practices are sustainable or not
- ⚙ Priority given to local producers and contractors

Infrastructure

While being hosted (renting) an existing facility (the hotel resort) which gives limited opportunities for improvements, the FAW also has two training centres they own, and which could be the subject of environmental improvements. The centre in Newport is strongly linked to the local council's sport complex which would require discussion with the local authority. This could indeed

The stadium FAW uses for the games belongs to a football club which has its own principles and operations. This limits potential improvements and would require mutual agreements. Certain opportunities were identified in the waste management and food and beverage areas, though.

The interviewer concluded the following:

- ⚙ Annual plans to identify priorities and budgets and minimise reactive interventions
- ⚙ Environmental provisions are a part of the scoring system, but appropriate scoring and comparison might be missing (benchmarking, LCA analysis ...)
- ⚙ Exemplary inclusion of ecosystem and wildlife features in buildings
- ⚙ Exemplary use of technology which could be enhanced with data monitoring and evaluation system (certain repetitive actions could indicate larger interventions/investments)

- ⚙ No communication with local authorities in terms of potential contribution to local strategies

Waste management

The fact that the stadium belongs to another entity – Cardiff City FC, direct interventions are limited and the environmental management of the stadium is left to the partner to be taken care of. The stadium does have considerably good waste management scheme when it comes to temporary storage, compaction and collection. Data is provided, but the way it is obtained it is difficult to account for the matches of Wales only.

Otherwise, although waste management has its clear principles and operational plan, it is not a part of any larger strategy which would encompass other environmental management aspects. Thus, planning and setting targets is difficult, as well as potential improvements, as the baseline scenario is difficult to assess (missing data, no surveys conducted etc.). The interviewee said an additional environmental/waste manager could bring improvements.

The interviewer concluded the following:

- ⚙ Attention given to general cleanliness
- ⚙ The stadium has a temporary storage which optimises the collection
- ⚙ The stadium belongs to another entity which makes improvements limited
- ⚙ No waste baseline scenario can be assessed due to the absence of data and surveys on behaviours and habits
- ⚙ No communication with local authorities in terms of potential contribution to local strategies

4.4.3 Circular City Committee outlook

Food & Beverage

This will largely depend on FAW's intentions whether to go into this collaboration; potential improvements exist – food waste monitoring, reusable cups.

Purchasing and suppliers' selection

Taking up contact with the city council or national authorities to understand the efforts, targets and policies.

Become a member of national platforms or similar.

Infrastructure

A merger/collab with the infrastructure outlooks (yet to come) on rainwater harvesting and solar panels investments.

Exploring improving the app

Waste management

This will largely depend on FAW's intentions whether to go into this collaboration; potential improvements exist – waste minimisation, improved recycling, replacement of single use products etc.

Looking at examples of good practice at Principality stadium, if any of their examples could be considered.

4.4.4 Applies KPI assessment

This tool was first applied through interviews with various FAW staff responsible for various fields of operations and processes and, subsequently, to make the assessment even more concrete, a case study description approach was used. More precisely, the interviews took place in January and February 2023, online, followed by a site visit on 28 March 2023. The secondary assessment, using the KPI tool

was completed in August 2023, as it wasn't available at the time of the study visit yet. The results obtained for each section are shown below. Important note to be highlighted is that the FAW uses the Cardiff City FC's stadium where many operations and logistics are taken care of by the stadium's subcontractors. Therefore, some of the interviews and assessments were done by external parties to the FAW. At the time of the interviews, the accommodation aspect could not be fully assessed due to the lack and unavailability of the person in charge of that.

Food and beverage: 45%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is the aspect food & beverages and related environmental impacts mentioned in your sustainability strategy or environmental policy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Not at the moment, but we are implementing it for the next version C) No, we do not have a sustainability strategy	A	1
Do you keep track of data about the food & beverages activities (amount of food consumed in the VIP area, amount of food consumed in bar & kiosks, amount of beverage consumed, etc.)?	A) Yes, we have implemented a monitoring system and we have all data regarding food and beverages activities B) Yes, we have a monitoring system, but some data regarding food and beverages activities are still missing out C) We are working to develop a monitoring system which now is not in place (evidence must be shown) D) It has never been evaluated	A	1
Have you ever assessed the relevance of food and beverage originated by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint B) We are collecting data to assess accommodation's impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	C	0.33
Have your employees (staff/players) received information on food and beverages sustainability?	N. of employees trained on food and beverage sustainability /no. of match-day personnel dealing directly with food and beverage	0%	0
Do you use signage, communication channels or other approaches for highlighting more sustainable food and beverage options you may be offering?	A) Bar, kiosks and catering services regularly highlight the more sustainable option B) There is only some generic info in the bar/kiosks/VIP area C) No signage, communication channels or other approaches	C	0
How frequently do you evaluate fans' awareness of the environmental impacts of food and beverages choices during matches?	A) We carried out a reliable survey at least one time per year B) We carried out a reliable survey at least one time every three years C) It has never been evaluated	C	0

Do you require environmental and sustainability-related criteria (such as the use of non-plastic cups, compostable objects etc.) in your call for offers and tenders when it comes to food and beverage activities?	A) We have developed a food and beverage minimum environmental criteria that contractors/suppliers must comply with (must have) B) We have developed a food and beverage minimum environmental criteria that contractors/suppliers are suggested to comply with (nice to have) C) We are working on such criteria D) It has never been evaluated	D	0
Have you implemented food and beverages sustainable improvement actions (compostable cutlery, reusable cups, vegetarian/vegan menus, refill stations, elimination of single use products, locally sourced food, etc.) for your matches/events?	A) We have implemented at least one sustainable action compared to the previous year/situation and we have already planned to implement another one in the next three year B) We have implemented one sustainable action compared to the previous year/situation C) We have not implemented any action, but we are working on it (evidence must be shown) D) It has never been evaluated	B	0.66
How much resources have you invested to achieve improvement actions in the field of sustainable food and beverages?	A) More than 10% increase of the economic/human resources foreseen for food and beverages B) Less than 10% increase of the economic/human resources foreseen for food and beverages C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	B	0.66
Have you ever involved your food and beverages contractors in environmental training/information (e.g., on how to manage waste produced in the kitchens)?	N° of food and beverages contractors trained in environmental topics / total N° of food and beverages contractors in all the events/matches in the year	75%	0.75
Has the organisation put in place collaborations with the municipality and other city actors for the delivery of food and beverage in home matches/events?	A) There are set collaborations with the city actors to deliver local/environmental- friendly food and beverages B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	D	0
Are you in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection)?	A) There are set agreements to discuss/coordinate actions to manage the waste produced by food and beverages activities and to improve waste collection B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	A	1

Food and beverage supply, service, management and disposal are essential for event management and their responsible and sustainable management can greatly increase or decrease their environmental

performance as well as the visitor experience. As mentioned above, these processes and operations are managed by a contractor of the stadium the FAW uses for its events. The FAW is aware of the impact food and beverage could have on the overall environmental performance and therefore includes it in its sustainability policies.

General conclusions after the interviews with the FAW and the contractors, the site visit and the KPI assessment is that more trust and expectations are put and expected from the subcontractors than what the FAW does itself. Nevertheless, the contractors are chosen wisely according to certain sustainability criteria during the procurement phase. And on average, the contractor has exemplary actions and approaches towards sustainable food and beverage management. After having visited the kitchens and talking to the chefs, ACR+ saw that the entire value chain of supply, preparation, demand, waste is centralised and feeds into a centralised database which provides flawless monitoring of quantities, hotpots, portion sizes etc. and allows the software to understand where the pressure is in terms of demand. The software also includes a database of recipes which allow optimal use of leftover ingredients or dishes (turning them into another one), as well as scraps!

Furthermore, the contractor puts a lot of efforts in training and educating its staff how to manage waste but also how to prevent it.

As reported during the interviews, but also visible in the KPI assessment, the FAW admitted that further discussions with the stadium and the contractors are ongoing to identify potential for additional improvements, namely “outside the kitchen” and the supply chain. Potential improvements could revolve around signage and extended communication of good practices, introduction of reusable cups and other environmentally friendlier items.

One aspect that is not present in the processes, operations and planning are cooperations with local authorities and agencies. The FAW is unaware of any policies that would promote local ingredients or healthy meals or similar.

Potentials exist in this field, many which would require the involvement of the purchasing and procurement departments, too as well as collaboration with the contractors.

Mobility: 48.73%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Have you ever monitored the sustainability of fans mobility in home/away matches?	A) We have developed a system to track and monitor fans mobility B) We have identified the monitoring system, but we have not yet started tracking fans mobility C) We are still discussing this possibility at internal levels D) It has never been evaluated	C	0.33
If yes, what is the percentage of fans who use sustainable means of transport (e.g., bikes, public transport, walking, sharing, etc.) to reach the venue?	A) Over 75% of the fans use sustainable means of transport B) Over 50% of the fans use sustainable means of transport C) Over 25% of the fans use sustainable means of transport D) Less than 25% of the fans use sustainable means of transport E) It has never been evaluated	D	0.25
If yes, how frequently do you evaluate fans' mobility?	A) We carried out a reliable survey at least one time per year A) We carried out a reliable survey at least one time every three years	A	1

	<p>B) We are discussing this possibility C) It has never been evaluated</p>		
<p>If yes, have you ever quantified the relevance of mobility originated by your matches/events in terms of environmental impact?</p>	<p>A) We performed a Life Cycle Assessment B) We carried out a carbon footprint + we collect quantitative environmental data C) It has never been evaluated</p>	B	0.5
<p>Have you ever received requests by your supporters about their mobility needs (e.g., official requests from supporters' club, email, oral requests, etc.)</p>	<p>A) There are specific opportunities for supporters to provide their feedback on green mobility B) We decided to give supporters the possibility to provide us suggestions, but we have not yet implemented a system C) We are still discussing this possibility at internal level D) It has never been evaluated</p>	C	0.33
<p>What is the percentage of employees who use sustainable means of transport (e.g., bikes, public transport, walking, sharing, etc.) to reach the workplace?</p>	<p>A) Over 75% of the employees use sustainable means of transport B) Over 50% of the employees use sustainable means of transport C) Over 25% of the employees use sustainable means of transport D) Less than 25% of the employees use sustainable means of transport E) It has never been evaluated</p>	D	0.25
<p>How much resources have you invested to achieve improvement actions in the field of sustainable mobility of fans and employees?</p>	<p>A) More than 10% increase of the economic/human resources foreseen for green mobility B) Less than 10% increase of the economic/human resources foreseen for green mobility C) No increase compared to the previous year, but still some budget has been foreseen D) Zero</p>	B	0.66
<p>Have your employees (staff/players) received awareness raising actions on green mobility?</p>	<p>N. of employees subjected to awareness raising action on green mobility/ Total N. of employees</p>	0%	
<p>Have your driver received information on green mobility?</p>	<p>N. of drivers who received information on green mobility / Total N. of employees</p>	0%	0
<p>Do you organise awareness raising events on green mobility targeting your fans?</p>	<p>A) We carried out at least two awareness raising events on green mobility targeting fans B) We have already planned the event, but we have not yet carried out it C) We are still discussing internally the possibility of organising awareness raising actions on green mobility D) It has never been evaluated</p>	C	0.33

Have you considered green criteria (Euro 6, methane, electric) in the selection of means of transportation for your players, staff, etc.?	A) Over 75% of the travels consider green criteria B) Over 50% of the travels consider green criteria C) Over 25% of the travels consider green criteria D) Less than 25% of the travels consider green criteria E) No green criteria are considered in the selection of the means of transportation	C	0.5
Do you have in place initiatives related to sustainable mobility of supporters with city actors (ticket of bus paid or discounted with ticket of match, free shuttles from train stations, increase number of trains etc.)?	A) We have developed such initiatives B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	C	0.33
Do you favour the use of bikes during match days, in collaboration with municipality? (such as by having a bike parking in the proximity of the stadium or a stadium achieved by bike lanes?)	A) We have set specific initiatives to favour the use of bikes during the matches in collaboration with the municipality B) We have set specific initiatives to favour the use of bikes during the matches (without the involvement of the municipality) C) We are still discussing internally this possibility D) It has never been evaluated	C	0.33
Do you have municipality electric bikes/bikes/push scooter sharing station close to the stadium?	A) Yes B) We have requested to the competent authorities to install them C) We are still in the planning phase D) No	A	1
Do you have electric cars recharging stations in the neighbouring of the stadium?	A) Yes B) We have requested to the competent authorities to install them C) We are still in the planning phase D) No	A	1
Do you offset the carbon emission connected with mobility?	A) Yes, we offset all the carbon emission connected with green mobility B) Only partially or we are discussing and planning this possibility C) No	B	0.5

The mobility which affects the FAW's performance in this field revolves around mobility patterns of their staff commuting to the HQ and the mobility of visitors on matchdays.

In order to understand the circumstances, it is important to mention that out of the 3.1 million people living in Wales, only 500.000 people live in Cardiff which implies major intercity travels on matchdays from other urban and many rural areas. Therefore, the mobility needs to be differentiated between people living in Cardiff and those who need to travel up to 300 km from the north of the country.

This previous statement and fact FAW take very seriously and puts efforts in understanding the current patterns and needs of visitors. It was expected to see only less than 25% visitors using some kind of environmentally friendly mobility solutions. Nevertheless, the FAW collects and analyses internally surveys and data coming from visitors and traffic/police authorities in order to come up with solutions that would decrease the pressure on urban traffic on matchdays. Solutions could see better communication activities targeting mobility explicitly, teaming up with private and public entities who provide transport services and more. In the south of the country, train connections exist and are used to some extent.

Locally, for visitors from Cardiff, bike lanes are available to the stadium (but aren't used a lot), and appropriate parking infrastructure is missing at the stadium, too.

On the staff mobility side, things are slightly different and mobility patterns are very much based on individual private cars. The simple reason lies in the fact that the HQ is located in the countryside with limited access by public transportation. However, the FAW provides and encourages carsharing, the use of electric vehicles especially for meeting outside the HQ.

Many ongoing discussions with relevant authorities are taking place and this project could see initiatives and solutions being put in place which would improve the mobility patterns around FAW matches and staff mobility.

Purchasing and supplier selection: 67.31%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Is the aspect on sustainable procurement and a sustainable supply chain and related environmental impacts mentioned in your sustainability strategy?	A) Yes, it is mentioned and at least evaluated in qualitative terms B) Yes, it is mentioned but it is not evaluated in detail C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability strategy	A	1
Do you take into account green criteria for purchasing and the selection of suppliers?	A) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, they are binding criteria and we consider them in purchasing and in the ranking for the selection of suppliers (must have) B) We have developed a purchasing and supplier environmental policy with minimum environmental criteria to comply with, but such criteria are not binding for purchasing and the selection of suppliers (nice to have) C) We are working on it (evidences must be shown) D) It has never been evaluated	B	0.66
How many suppliers are covered with environmental certifications?	N. of suppliers (relevant from an environmental perspective) with at least an environmental certification (at organisational level)/ Total N. of suppliers	70%	0.7
How many fertilizers you purchase are covered with environmental certifications?	% of organic fertilizers	80%	0.8
How many cleaning products you purchase are covered with environmental certifications?	€ of purchased green cleaning products / Total € of purchased cleaning products	70%	0.7
Have you ever carried out on-site audits evaluating the suppliers' environmental management (against your sustainability criteria, in their facilities and during matches)?	N. of suppliers (relevant from an environmental perspective) audited (in their facilities, during matches, etc.)/ Total N. of suppliers	20%	0.2

Have you ever assessed the relevance of your suppliers in terms of environmental impact?	A) We have considered them in quantitative evaluation metrics (such as LCA) B) We are collecting data to assess suppliers' impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.66
Have you ever assessed the relevance of the products/materials you purchase in terms of environmental impact?	A) We have considered them in quantitative evaluation metrics (such as LCA) B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	A	1
Have you ever involved your suppliers in environmental and circular economy training with regard to their activities (e.g., on how to manage waste produced during events, etc.)?	N. of suppliers involved in environmental and circular economy training / Total N. of suppliers with relevant environmental impacts	0%	0
Have you ever received sustainability requests by your staff/players about their purchasing and suppliers needs?	A) We are receiving suggestions from staff/players on green purchasing and supplier selection B) We have created a specific channel (green whistleblowing) to give staff/players the possibility to provide suggestions, but it has never been used C) We are still internally discussing this possibility D) It has never been evaluated	C	0.33
How much resources have you invested to achieve improvement actions in the field of sustainable and circular purchasing and supplier selection?	A) More than 10% increase of the economic/human resources foreseen for sustainable and circular purchasing and supplier selection B) Less than 10% increase of the economic/human resources foreseen for sustainable and circular purchasing and supplier selection C) No increase compared to the previous year, but still some budget has been foreseen D) Zero	A	1
Do you have a list of local suppliers?	A) Yes, we defined a list of local suppliers B) We are currently collecting information to create the list of local suppliers C) We are still internally discussing this possibility D) It has never been evaluated	A	1
Do you purchase locally (products/materials produced in the same region where it is needed)?	nr. of local suppliers / total nr. of suppliers	70%	0.7

When it comes to this aspect, the FAW can be considered as exemplary in this field, as green procurement and criteria play an important role in their sustainable strategy with policies in place to reinforce it, giving enough attention to choosing sustainable products, contractors with certain certifications or using such products. This is reflected in several fields, such as pitch maintenance, to cleaning services and other. However, the assessment showed that after the selection of the supplier or the contractors, checks and verifications rarely take place through evaluations and monitoring.

Trainings and awareness raising activities don't necessarily take place, but more attention is paid to proofs and certificates potential supplier have.

There are some ongoing initiatives internally, mainly revolving around understanding in what fields could these operations have a better environmental performance.

Although a small country, the FAW tries to maintain a list of local suppliers and producers which sometimes obviously come from elsewhere in the UK.

Waste management: 61.56%

INDICATOR	Formula/answers	Result	KPIs RESULTS (hidden column)
Is waste management mentioned in your sustainability strategy/policy?	A) Yes, it is mentioned and evaluated in quantitative terms B) Yes, it is mentioned and evaluated in qualitative terms C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability/policy strategy	B	0.66
When establishing your waste management goals, do you take into account the policy priorities of your city?	A) Yes, we have discussed and shared the objectives with representatives of the municipality B) Yes, we are aware of the municipality's waste goals because we consult their waste policy documents C) Yes, but without careful verification D) No	B	0.66
If you have a policy, how much of your waste management objectives reflect the targets of your local/regional authority? (waste prevention, increasing overall recycling rates, elimination of certain items or material, landfill diversion targets, separate waste collection rates, carbon targets, reduction of food waste)	% of objectives consistent with the city's priorities	80%	0.8
How often are you in contact with your relevant local/regional waste authorities for understanding the new priorities and targets?	A) At least once every year B) Periodically, but without a defined timeframe C) We are not in contact with such authorities	A	1
Do you keep track of data about waste management (amount of waste produced in the stadium/event, percentage of recovery/recycling/landfill according to waste management indicators of your city/region, etc), through a system of performance indicators?	A) Yes, we have implemented a monitoring system and we have all data regarding waste B) Yes, we have a monitoring system, but some data regarding waste are still missing out C) We are working to develop a monitoring system which now is not in place (evidence must be shown) D) It has never been evaluated	B	0.66

Has the organisation clearly defined which actors (the organisation itself, the suppliers, the municipality, the waste management operator, etc.) are in charge of waste collection during matches/sport events (inside/outside the stadium)?	A) All situations are clearly identified by the organisation in advanced and the actors in charge appointed without any issue B) All situations are clearly identified, but sometimes there is uncertainty on who should be in charge of waste management and misalignment might happen C) It has never been evaluated by the organisation, since other actors take care of waste management	A	1
Do you carry out during the match some on-site visits around and inside the stadium in order to understand issues related to waste management? For example: need of bins (in case of separate waste collection, etc.)?	n. of matches/sport events where waste management is checked through on-site visits / n. of matches/sport events	25%	0.25
Have you ever assessed the relevance of the waste produced by your matches/events in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint considering waste data B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	B	0.66
Have your employees (staff/players) received information on waste management?	N. of employees subjected to awareness raising action on waste management / Total N. of employees	0%	0
Have your employees (who work directly with waste) received information on waste management?	N. of employees who work directly with waste trained on waste management / Total N. of employees who work directly with waste	0%	0
How many awareness raising activities/events on waste management environmental impacts targeting your fans have you organized?	A) At two least two awareness raising activities B) One awareness raising activity C) No awareness raising activities	C	0
How frequently do you evaluate fans' awareness of the environmental impacts of waste management choices during your matches?	A) We carried out a reliable survey at least one time every three years B) We are planning C) It has never been evaluated	A	1
Have you implemented waste management improvement actions (waste collection signals, separate collection, take-back systems, etc.) for your matches/events?	A) We have implemented at least two sustainable actions compared to the previous year/situation B) We have implemented one sustainable action compared to the previous year/situation C) We have not implemented any action, but we are working on it (evidence must be shown) D) It has never been evaluated	B	0.66
Do you donate the leftover food to local city actors (e.g. caritas, parishes, etc.)? Or use other approaches to avoid the food waste (Too Good to Go, for example)	<i>Nr. of matches with food donation / Total nr. of matches</i>	50%	0.5

<p>If you do not donate the leftover food, does the organic waste go to composting facilities inside the city?</p>	<p>A) Organic waste is composted inside the stadium facility B) Organic waste goes to composting facilities within the city C) Organic waste goes to composting facilities outside the city D) We have unsorted collection/we do not know</p>	<p>A</p>	<p>1</p>
<p>Are you in contact with city actors to discuss/coordinate actions to manage the waste produced by food & beverages activities outside of the stadium (e.g., agreements with waste management company to increase waste collection)?</p>	<p>A) There are set agreements to discuss/coordinate actions to manage the waste produced outside the stadium and to improve waste collection B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated</p>	<p>A</p>	<p>1</p>

The FAW has a very good score for waste management, taking into consideration that they use a stadium which doesn't belong to them, so the environmental impact is rather indirect when it comes to this aspect.

It does appear in the FAW's policies and strategies, and the tendency is to have them aligned with the targets and strategies of the local authorities. This is also reflected in regular and continuous contact with the local authorities, as well as clearly defined roles and responsibilities allocated to various actors along the waste value chain – separation, collection, and treatment. The study visit also helped ACR+ to see the temporary storage at the stadium's premises which optimises considerably the collection of various waste streams.

Certain onsite visits and monitoring are carried out during the matches to get a better idea of how it works in practice which helps further understanding the impact various waste streams have on overall management and identifying the hotspots. Apart from onsite visits and monitoring, surveys are conducted in order to understand the behaviour of visitors. All this intelligence which is collected through these activities help the FAW to come up with certain improvement actions.

However, the arising issue is that the intelligence and the improvements are not necessarily shared with the visitors what could hamper the implementation of certain new practices.

When it comes to specific waste streams, such as food waste, food donation is a common practice which takes place occasionally.

The FAW reported that agreements exist with the local authorities in terms of responsible waste management and many of these operations and processes are long-lasting agreements the stadium (Cardiff City FC) and the contractor have with them.

Overall speaking, many of these responsibilities and good waste management practices are a shared responsibility between the FAW, the stadium owners and the contractor. It works reasonably well. Ongoing discussions and meeting take place occasionally which is very encouraged. A better use of data could contribute to better management. Further meetings could lead to new innovative measures and increased communication activities could contribute to better participation of the visitors.

Stadium infrastructural improvements: 60%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Are sport facilities and stadium infrastructures (Please see Stadium infrastructures guidelines of UEFA for a definition) mentioned in your sustainability strategy/policy?	A) Yes, they are mentioned and evaluated in quantitative terms B) Yes, they are mentioned and evaluated in qualitative terms C) Not at the moment, but we are implementing it for the next version D) No/we do not have a sustainability/policy strategy	A	1
When establishing your stadium infrastructure goals, do you take into account the policy priorities of your city?	A) Yes, we have discussed and shared the objectives with representatives of the municipality B) Yes, we are aware of the municipality's waste goals because we consult their waste policy documents C) Yes, but without careful verification D) No	A	1
If you have a policy, how much of your stadium infrastructures objectives reflect the targets of your local/regional authority?	% of objectives consistent with the city's priorities	100%	1
How often are you in contact with your relevant local/regional authorities for understanding the new priorities and targets related to stadium infrastructure and sport facilities?	A) At least once every year B) Periodically, but without a defined timeframe C) We are not in contact with such authorities	A	1
Do you have a maintenance management system for infrastructural improvement interventions with regard to sustainability?	A) Yes, we have implemented a maintenance management system, with KPIs, and we set sustainability criteria and objectives B) Yes, we have a maintenance management system, but without clear and defined sustainability criteria, KPIs and objectives C) it has never been evaluated	A	1
In case of new building or infrastructures, have you defined sustainability criteria and objectives to integrate in their design (eco-design) and development?	A) Yes, we have set clear sustainability criteria and objectives, which are mandatory (must have) B) Yes, we have set clear sustainability criteria and objectives, but they are not mandatory (nice to have) C) it has never been evaluated	B	0.5
Have you ever assessed the relevance of the stadium infrastructures and sport facilities in terms of environmental impact?	A) We performed a Life Cycle Assessment/carbon footprint (or similar quantitative metrics) B) We are collecting data to assess environmental impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	n/a	n/a

Have your employees (staff/players/coaches) received information on sustainable management of stadium infrastructures and sport facilities?	N. of employees trained on sustainable management of stadium infrastructure and sport facilities / Total N. of employees who work on stadium infrastructure	0%	0
How many awareness raising activities/events on stadium infrastructures and sport facilities environmental impacts targeting your staff (employees, players, coaches, etc.) have you organized?	A) At two least two awareness raising activities B) One awareness raising activity C) No awareness raising activities	C	0
In case of ownership of the stadium by a city actor (e.g., municipality), have you set and implemented with the actor sustainability improvement actions regarding the stadium infrastructures?	A) There are set and joint agreements with the city actor to improve the sustainability of the stadium infrastructure B) We are currently working on it (evidence must be shown) C) It has never been evaluated	n/a	n/a
Even if you are the owner of the stadium, have you set and implemented with the city actors (i.e. municipality) sustainability improvement actions regarding the stadium infrastructures?	A) There are set agreements with the city actors to improve the sustainability of the stadium infrastructure B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal level D) It has never been evaluated	B	0.5
Have you ever offset your carbon emissions linked with the use of sport facilities and stadium infrastructures?	% of offset carbon emissions connected with sport facilities and stadium infrastructures	0.00%	0

The score of 55% needs to be taken with a reserve as it is a combination of two specific circumstances – FAW's own facilities (training grounds, the HQ) and the stadium the FAW uses for its games. Apart from the stadium that belongs to Cardiff City FC which the FAW uses for its home games, the FAW owns Dragon Park in Newport as well as Colliers Park in Wrexham which serve as training centres and youth bases. The results therefore reflect the mix of owned facilities and external facilities used for matches.

The results and the average score of 60% somehow reflect these circumstances. The best scores that were reported certainly revolve around facilities and projects belonging to the FAW. The interviews confirmed this, as the training facilities in Newport and Wrexham are very much dependant on cooperation with the local authorities as they are located in a shared area and exemplary collaboration is evident in these cases.

The management and maintenance of these facilities are also defined by a set of criteria, objectives, KPIs and other indicators useful for monitoring purposes.

A SWOT analysis was done for the Newport facilities which gave answers to necessary improvements. Priorities and needs were subsequently identified and be a part of a 2–3-year long strategy defining the timeframe and specific improvements which could include waste management, recycling improvements, consumption patterns and similar.

FAW's new sustainability plan which oversees a variety of operations and governance already gives some guidance in what should be done and general directions.

What concerns the training centre in Newport, it is shared with the local council as it includes additional facilities – fishing, cricket, football ground etc. The owner is Newport Live, the local sporting department. Everything needs to be run past them, as foreseen by the partnership project, therefore all lighting, parking and other features need to involve them.

One example of good practice that could be highlighted is the heating and lighting system which is based on energy saving principles – mainly automatic monitoring. This is coupled with heating measurements which gives clear indication on how much is saved. This applies to both Newport and Wrexham centres.

Overall speaking, when it comes to facilities belonging to the FAW, a very responsible and collaborative approach exists which ensures that those facilities don't only serve the FAW but also meet the expectations of the local authorities and contribute to a good and sound environmental management in those communities.

Apart from the contractors, FAW has a consultant who looks after the facility developments. The consultant was involved in FAW's current building and assists with understanding the buildings features.

Internally, while there are initiatives to understand the environmental impacts of the facilities, not much awareness raising activities are conducted towards the staff and those who use them.

What slightly "ruins" the overall score can be considered external to the FA – the maintenance of the stadium owned by Cardiff City FC, therefore the relations with the local authorities were not established until now. The FAW reported that this would be a new initiative and idea to talk to Cardiff city council, too.

Accommodation: 21%

INDICATOR	Formula/answers	Result	KPIs RESULTS
Do you take into account green criteria for the selection of accommodations for your staff/players during away matches/events?	A) We have developed an accommodation environmental policy with minimum environmental criteria to comply with, they are binding criteria and we consider them in the ranking for the selection of the accommodations (must have) B) We have developed an accommodation environmental policy with minimum environmental criteria to comply with, but such criteria are not binding for the selection of accommodations (nice to have) C) We are currently discussing internally the green criteria for the selection of accommodations D) It has never been evaluated	C	0.33
Have you ever carried out on-site visits to evaluate the environmental management of the accommodations to be selected? (home and away matches/events)	A) Yes, at least once per year we perform environmental on-site audits according to the criteria we developed in our accommodation environmental policy B) We have defined an audit programme, but we have not yet started the on-site visits C) We are still discussing internally the possibility of carrying out on-site visits to evaluate accommodations D) It has never been evaluated	D	0
Have you ever assessed the relevance of your accommodation decisions in terms of environmental impact? (home and away matches/events)	A) We have considered them in evaluation metrics (such as LCA, carbon footprint, etc.) B) We are collecting data to assess accommodation's impacts C) We are discussing internally on this possibility (call for offers, etc.) D) It has never been evaluated	C	0.33

Have your employees (staff/players) received information on green accommodations?	N. of employees (connected with Sustainability Department and Accommodation) who received information on green accommodations / Total N. of employees (connected with Sustainability Department and Accommodations)	0%	0
Have you ever asked suggestions on sustainability requests by your staff/players about their accommodation needs?	A) We have carried out a survey to assess this aspect B) There are specific opportunities for staff/players to provide their feedback on green accommodations C) We are still discussing how collecting suggestions D) It has never been evaluated	C	0.33
Do you organise awareness raising actions on green accommodations targeting your fans?	A) We carried out at least one awareness raising events on green accommodation targeting fans B) We have already planned the event, but we have not yet carried out it C) We are still discussing internally the possibility of organising awareness raising actions on green accommodations D) It has never been evaluated	C	0.33
Do you adopt external communication towards fans to promote green accommodations during home/away matches?	A) We provide a list of ecolabel hotels together with the tickets B) We provide a list of ecolabel hotels in the city on the website C) It has never been evaluated	C	0.33
Do you interact with travel agencies to promote the use of green accommodations for fans during home/away matches?	A) We have set agreements with travel agencies to promote green accommodations B) We have already identified the travel agencies, but no agreement has been done C) We are identifying the travel agencies D) It has never been evaluated	D	0
Have you promoted initiatives with the municipality and other city actors to provide discounts for the selection of green accommodations by away-fans?	A) We have collaborated and promoted initiatives to provide sustainable hotels and discounts for fans B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal levels D) It has never been evaluated	C	0.33
Has the organisation put in place initiatives with the municipality and other main city actors to boost green practices adoption by accommodation owners?	A) We carried out at least one awareness raising event with main city actors on green accommodation targeting hotels and accommodation owners B) We are organising meetings with municipality and other city actors, but no initiative has been done C) We are still discussing this possibility at internal levels D) It has never been evaluated	C	0.33
How do you monitor the outcomes of/ the improvements provided by your initiatives to boost green accommodations?	A) Feedbacks from accommodations we recommended B) Quantitative feedbacks from staff/players C) Qualitative feedbacks from staff/players D) It has never been evaluated	D	0

With an average score of 21%, one could conclude that the FAW (like other sport organisations) has not yet given this aspect enough attention. The truth is that environmentally friendly certified or

sustainable accommodation options did not yet receive enough attention in other industries and processes either, such as tourism, culture.

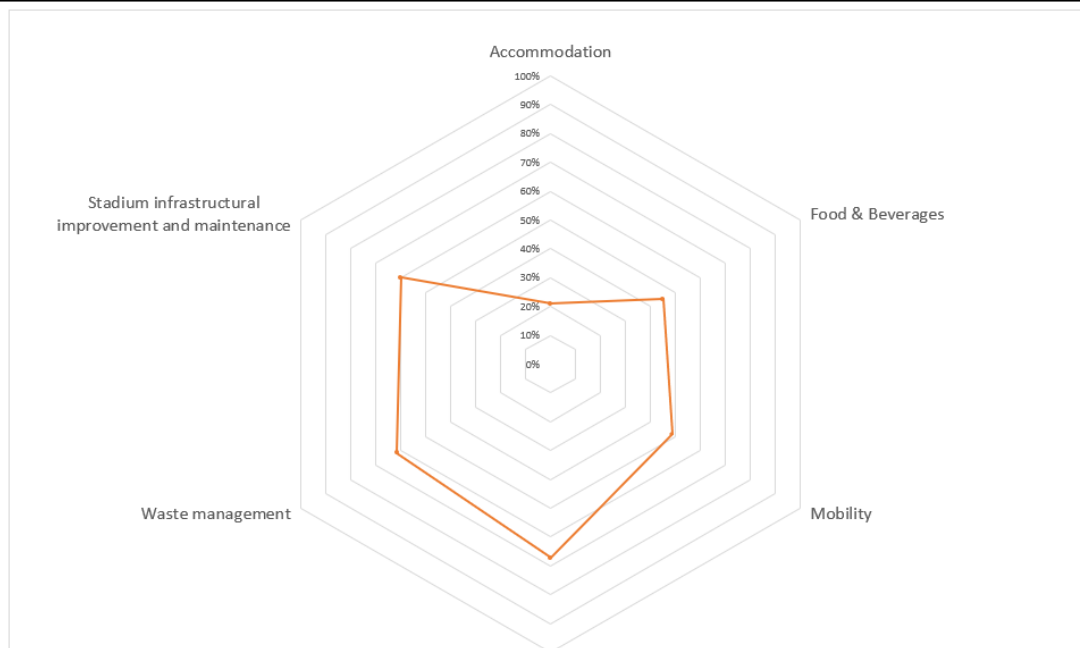
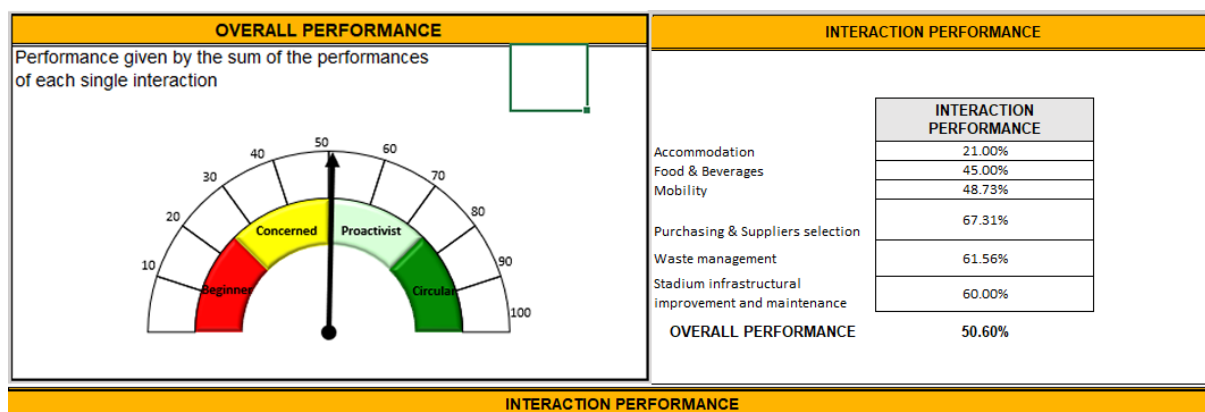
Accommodation options are very often looked at through certain features like location, distance to the stadium, comfort, etc., rather than through the potential environmental impact of the choices. This is often the case when it comes to professional and high-level sports. Nevertheless, although the FAW was not paying as much attention to these before, they reported that certain steps are being considered internally in order to improve these operations.

The away matches are also organised rather in a way to provide comfort, efficiency and getting to away venue as quickly as possible without consulting travel agencies who could provide sustainable options. Monitoring and assessment of accommodation and travel options are also lacking and thus further conclusions are rather difficult to be drawn.

This project will certainly open the space to such considerations and discussions through the Circular City Committees.

4.4.5 Overall results

Following the presentation of the results, the style of performance of the FAW and the stadium they use in terms of circularity is rather exemplary with just above 50% of the overall performance. If Accommodation is disregarded, the overall performance of other conventional operations and processes is even better.



The circularity performances are represented both through a speedometer, which serves to present the overall performances, and through a target graph, which serves to represent the performances for each phase.

Taking all the various circumstances into consideration, one could see that the FAW has an environmental management well balanced with certain aspects that could be considered exemplary, especially in terms of facilities and infrastructure management (those that belong to the FAW), food supply and management, waste management and purchasing and supplier selection. Other processes and operations which are very dependent on external factors such as mobility, stadium maintenance and everything else that is to a greater or lesser extent outside of the FAW's capacity to influence slightly compromise the overall environmental performance. Therefore, reinforcing the cooperation between public authorities, other public and private stakeholders and the host stadium could lead to considerable improvements.

If we look at some of the least performing – mobility and accommodation, a simple explanation can be found, as already mentioned in the respective chapter. The fact that Wales is a mix of urban and rural population requires measures that would improve more sustainable mobility patterns, especially in terms of group travels, which would take the pressure off the traffic in Cardiff. Improving train offers, reinforcing charter busses and complementing all these with appropriate communication activities could see improvements overall. When it comes to accommodation, simple steps towards improving the environmental performance of these operations could contribute to the overall score, too. However, in order to achieve this, brand new initiatives should be considered.

When it comes to the infrastructure and facilities, it has to be observed from two perspectives – one looking at facilities owned by the FAW and those belonging to other entities yet used by the FAW. The latter would indicate the need for more cooperation and joint efforts.

The waste management can be considered satisfactory, taking into consideration the alignment with the local waste management strategy and responsible and sound waste management in general. Eliminating certain waste streams, such as single use plastic could be envisaged. However, this would require approvals and agreements from the stadium owner's side, too.

Overall speaking, while the FAW has considerably good environmental management of various operations in place, a further collaboration with the public authorities and agencies could be envisaged, as well as reinforcing internal strategic decision in the field of environment and sustainability. Quantifying certain operations and the results more could lead to a better monitoring system (of resources, waste, storing and more).

The following table summarizes in detail for each phase the number of indicators for which it was not possible to carry out an evaluation.

Interaction	Indicators not calculated due to unavailability of values
Accommodation	/
Food & Beverage	/
Mobility	/
Purchasing & Suppliers selection	/
Waste Management	/
Stadium Infrastructural improvement and maintenance	2

Throughout the interviews, the FAW was aware of the current drawbacks and it was reported that those would indeed make it to the next phase, where certain solutions would be discussed with various private and public stakeholders. These additional solutions and new practices could further improve the score and add up to the exemplary environmental management already.

Interaction	Possible improvements
Accommodation	n/a
Food & Beverage	Improving the image of Croke Park by highlighting the sustainable and responsible food and beverage management
	Introduction of reusable cups/cutlery/crockery
Mobility	Reinforcement of Transport for Wales' efforts to provide group transfers
	Making better use of the transport infrastructure in the south
Purchasing & Suppliers selection	Taking up contact with the city council or national authorities to understand the efforts, targets and policies.
	Become a member of national platforms or similar
Waste Management	This will largely depend on FAW's intentions whether to go into this collaboration; potential improvements exist – waste minimisation, improved recycling, replacement of single use products etc.
	Looking at examples of good practice at Principality stadium, if any of their examples could be considered
Stadium Infrastructural improvement and maintenance	A merger/collab with the infrastructure outlooks (yet to come) on rainwater harvesting and solar panels investments
	Following up on the SWOT analysis to make the Newport facility more incorporated in the local city council's strategies and targets

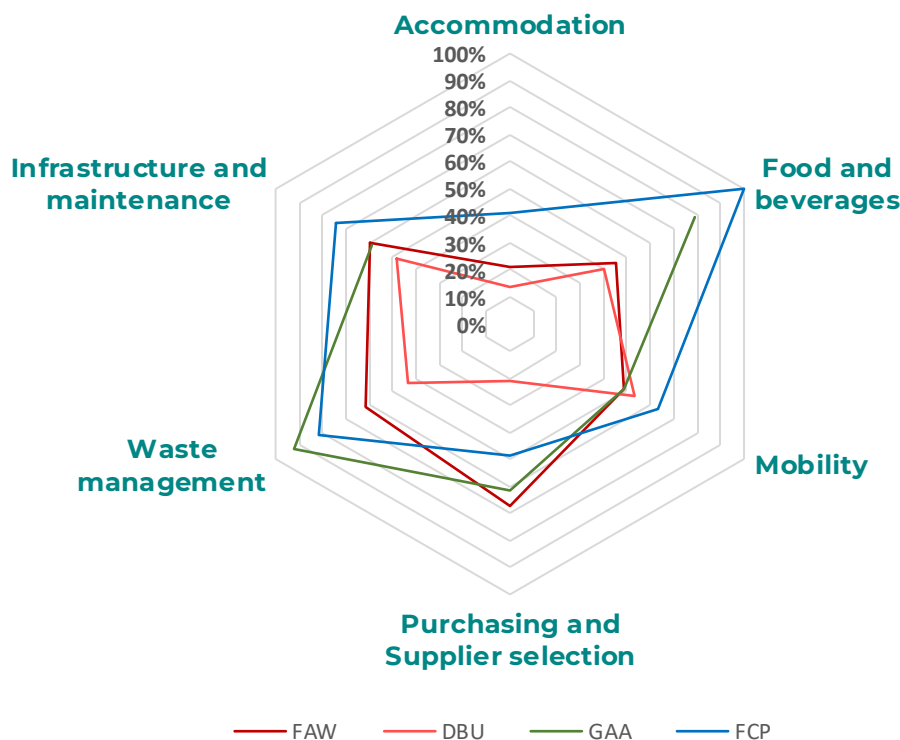
5. CONCLUSIONS

This exercise allowed both the technical partners and the sport organisations to get a better insight in some key processes and operations, their potential positive or negative environmental impact and the opportunities for enhanced cooperation with local and regional authorities and agencies, as well as other private stakeholders.

It is now more than obvious that relevant national and international sport authorities and federations want to see environmental protection getting more and more embedded in governance in sports – on both club and national levels. Many sport organisations are yet to understand their environmental impacts through assessments, screening, and other methodologies, develop internal capacities, partner up with relevant stakeholders and target certain processes and operations which would considerably improve overall environmental management.

This particular exercise looked at six groups of processes, previously agreed among the project partners. Each of them covered and included a series of various activities and operations – all looked at from the environmental point of view and the positive or negative effects those operations could have on the overall environmental management. The whole exercise was enriched with a quantitative assessment, too, by using a KPI dashboard specifically developed for the project's purposes.

To be able to give overall conclusions, apart from the individual ones we already did in the previous chapters, we will look at a comparative analysis of the sport organisations and identify common causes for positive and negative impacts.



In the figure above, the four lines represent the results of FC Porto (blue), the GAA (green), the Danish FA (orange) and the Welsh FA (red)

The first tendency we see revolves around accommodation – of the team, staff, visiting fans and other groups who require a sleepover during a tournament or a single away game. Important to repeat is that the GAA does not organise any accommodation for any of the teams or visitors, therefore their score isn't presented in the chart.

Otherwise, the low score among the other sport organisations, all below 50% of the best possible score (with a slightly better performance by FC Porto), can be looked from various angles, each containing a considerable number of assumptions. Many top-level sport organisations (whether clubs or associations), especially professional ones, depend considerably on the comfort of travelling to away matches – from getting there faster, being accommodated considerably near the venues, the accommodation being big enough and other aspects which could compromise their performance. At the same time, many of the sport organisations don't have enough human resources to perform visits or create lists of “green” accommodation options.

Nevertheless, the fact that the accommodation and hospitality sector is transitioning towards being more sustainable and applying more circular economy solutions should open the possibility for sport organisations to browse and impose the selection of labelled or certified hotels on their travel agencies or their own departments.

When it comes to the supporters, it is rather difficult to communicate the choices to the visiting supporters and thus it all lies within the visitors' choices and behaviour.

Mobility, which is to some extent similar in all four cases, we need to look at one difference between FC Porto and other organisations. FC Porto was the only club which targets local supporters and attracts visitors from the city and the region and plays matches every second week (on average), with exception of European games and foreign visitors. On the other side, in case of Dublin, Copenhagen and Cardiff, a great share of visitors comes from other parts of the countries which often requires private vehicles or carsharing in the best case. Due to late kick off, visitors often have limited choices to use the national rail or bus services. Considerable improvements could be achieved in this field in cooperation with local and national traffic authorities and private operators (railways, bus operators), as well as local authorities who could promote soft and group mobility through giving certain advantages to coaches, carsharing (parking spaces closer to the venue), free local transportation tickets in case of using provided “park and ride” or “kiss and ride” areas outside the city centres and other group mobility solutions. FA of Wales has already started exploring organised late coaches to different parts of the country, while other organisations have certain initiatives in place, but with limited impact.

Green procurement is appearing more and more in sport organisation purchasing and supplier selection procedures, which is encouraging. However, a full application is still lagging and does not necessarily play the crucial role in final selections. Criteria exist and many strategic documents feature sustainable products, locally sourced (where possible) and products with other “green” characteristics. In many cases, these choices are left to the contractors, the case where this focus and effort depends on the environmental performance and strategy of the contractor. Nevertheless, nearly all organisations reported that they were organising periodical meetings with the contractors in order to ensure environmentally sound and responsible infrastructure management, food and beverage provision, cleaning and other services.

Similar to accommodation of teams, staff and their travel options, certain limitations need to be taken into consideration in the purchasing and supplier selection procedures, especially the quality of the services, goods, equipment or other items that are being procured. Often, the environmental performances of these items can't be considered as important as other technical requirements.

The most important observation and conclusion that can be drawn from the chart is the difference between sport organisations who own a venue and those who rent them or use different venues every time. When it comes to food and beverage, waste management, as well as infrastructure management, the GAA and FC Porto have a considerable better score, as they are able to organise these processes themselves, according to their strategic plans and policies and objectives and thus provide and secure

good “housekeeping”. Linked with the procurement and supplier selection – they have a better overview of these processes, and the reactivity is quicker.

Finally, to reflect on the KPI tool, which was used in this exercise, these assessments allowed the technical partners to understand certain processes better and to be able to focus on the most relevant processes with the biggest environmental improvement potential and perhaps disregard irrelevant KPIs, or those which can be considered important only for already advanced organisations. The exercise showed that although the participating sport organisations are already aware of their environmental performances with many relevant targets and objectives being featured in their strategic documents, they still have a way to go to reach more advanced performances – mainly through implementing and applying those aspirations. Therefore, a conclusion for other practitioners and technical experts is to understand the processes with the biggest potential and focus on low-hanging fruits and perhaps. This would allow them to optimise the KPIs by either downscaling them in case of an organisation lagging behind others or upscaling it in case of an already exemplary association which wants to strive for more.

When it comes to the ACCESS project’s general objective – enhancing the cooperation between sport organisations and their local and regional authorities, potentials exist although they are not yet explored and established on the long run. In many cases, meetings and collaboration exist, but those mainly revolve around the events and with relevant authorities (police forces, traffic authorities) in order to avoid nuisances and provide security. It is encouraging to see that sport organisations know who the relevant environmental authorities are and that certain platforms are being set up. It is now the role of the project to make sure these platforms are exploited properly for the good of both sides – the sport organisation and local authorities.

To look back on the process, the fact that the project includes both technical partners and sport organisations opened the door to technical experts and practitioners to collect more intelligence on processes and operations through the lenses of quantitative and qualitative assessment, data collection where possible and general observations. Such an opportunity greatly contributes to academics, experts, and other practitioners’ efforts to understand better the world of sports from the environmental impact perspective and further contribute to finding solutions for improved environmental management and circular economy in sports and implementing them appropriately. On the other side, such initiatives considerably help sport organisations to understand their environmental impact through thinking out of the box, in the first place, and additionally – take advantage of the great pool of solution and technology providers that exist in their immediate surrounding. By reaching out to relevant public authorities and agencies, sport organisations can greatly contribute to overall regional or national strategies and targets in terms of environmental protection.



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