

Inclusive and Participative Decision Making for Improving Environmental Performances in Football Stadiums: Brussels' Roi Baudouin stadium study case

Abstract

The last several years have seen a never larger interest in climate change and its consequences. This phenomenon is going beyond any generational, gender, national or any other barriers. In fact, this concern became a cross-industrial, cross-sectoral and cross-institutional involving a large number of different individual entities acting together, reviewing and assessing their environmental practices. The world of sports was not left out either. We can see a number of initiatives emerging alongside with other socially-responsible ones, such as those aiming at eradicating racism in sporting events, enhancing fair play and keep sports clean of drugs and other forbidden substances. One of them is a pan-European project, supported by UEFA, which includes 10 pilot football stadiums and is aiming at improving environmental performances in them. Football stadiums can be easily aggregated to small and medium sized towns considering their capacities. Therefore, a football game could easily result in environmental impacts similar to those such cities have at the end of a day. As a match day is much more than the 90 minutes of game play improvements in environmental performances concern a wide range of stakeholders from food and beverage providers, local administration, waste management companies to the game host and event organiser itself. This paper reports on a successful case study of Roi Baudouin stadium in Brussels, presents findings and data on key environmental indicators and analyses the involvement of local stakeholders in improving them.

1. Introduction

For the first time in the history of FIFA (Fédération Internationale de Football Association), the football World Cup held in Germany 2006 specifically addressed environmental concerns (Dolles and Soderman, 2010). An increasing number of studies started researching and assessing sport events in the light of their environmental impact in the upcoming years. These studies confirm this new trend of rethinking the environmental impact of sporting events (Babiak & Trendafilova, 2011; Casper, Pfahl, & McSherry, 2012; Greenhalgh, LeCrom, & Dwyer, 2015). Certain studies look deeper at what kind of impact football games create in particular and they report significant damages to the natural environment by consuming substantial energy and resources and generating food and drink waste, as in the case of the FA Cup Final (Collins et al., 2009). These can refer to sustainable mobility (Acácia et al., 2013), waste management (Dosumu et al., 2014) and other aspects of environmental management.

Improving environmental practices in football games requires a holistic, cross-sectoral approach without ignoring governance issues which would result in an implementation of a multi-stage process (Dolles and Soderman, 2010). In the simplest terms stakeholders can be defined as individuals or groups who affect or are affected by a policy. Stakeholder participation can thus be defined as a process where individuals, groups and organisations are invited and choose to take an active role in making decisions that affect them (Wandersman, 1981; Wilcox, 2003). Stakeholder participation differs thus from broader public participation, since stakeholders are only those who can affect or be affected by a decision. However, policy-makers have registered and communicated an increasing need to seek citizens' inputs in decisions that affect the public, particularly in the environmental arena (Glicken et al, 1999).

Stakeholder participation in policy decision-making have several benefits:

- quality and durability of decisions is greater (Reed et al., 2008). Information from stakeholders brought into the deliberation contributes to avoid unintended consequences of decisions, such as environmental ones, and more adherence of those to existing contexts. More solutions to solving problems might be formulated.
- social consensus is more easily reached. Stakeholders engagement increases public understanding of the issues and consequences of different choices and reveals both conflicts and agreements among different stakeholder groups. At the same time, open and inclusive stakeholder engagement, including representatives of different viewpoints, can sometimes resolve differences and build trust in the policy making process and therefore help secure public acceptance of decisions (e.g., Kleivink, et al, 2012).
- the process of decision-making and final decisions becomes more transparent and legitimate. (Perello, M., De Luca, C., 2016)

However, even though environmental sustainability is becoming a priority within football events, the related sport management literature regarding the governance and operation of environmental sustainability and the integration of environmental sustainability into different sport industry sectors and contexts is underdeveloped (Mallen et al., 2011; Graham et al., 2018). To answer this challenge, our research was looking at the underlying environmental indicators which would give the way to actions aimed at improving these processes through a participatory decision making. The case I want to present here is the one of Roi Baudouin stadium in Brussels.

The paper is structured in a way that it first presents the stadium as the focus of this case study, explains the tools used in the research and how the target group was defined, as well as the system

boundaries. It further presents the results and the processes which led to the list of decisions and actions to be implemented.

2. Theoretical background and research questions

2.1 A football game as a medium-sized town for a day

As previously mentioned, it was at the 2006 FIFA World Cup that organizers in Germany voluntarily pursued the goal to reduce some of the environmental impacts of the tournament through its “Green Goal” environmental initiative, which set environmental protection targets (Collins and Flynn, 2008). More and more such initiatives which are currently rather voluntary have been emerging as large events like the Super Bowl, the Olympics, and FIFA World Cup were pioneering the adoption of environmental programs or guidelines including tree planting to offset carbon emissions of sport event, recycling initiatives, food recovery and distribution and environmental procurement guidelines (Babiak & Wolfe, 2006; Dolles and Soderman, 2010; Paquette et al., 2011).

If we take into consideration that an average attendance in the English Premier League in the 2019/2020 season so far amounts to 38,776 people, one could easily look at it as a medium-sized city for a day (Daily Mail, 2019). Considering further the fact that an average resident of UK generates 1.28 kg of municipal waste per day (Eurostat, 2019) but a whopping 3.24 kg of waste during a football league matchday (Dosumu et al. 2014) the increasing concern over environmental performances and impacts of a football game makes more and more sense.

We can't ignore either the fact that much of the sport management focus nowadays goes on sport events, the marketing of sport and the sale of sport products. This transition shows that the sport industry constitutes one of the major economic activity in most countries by influencing business

and society (Sainam et al., 2010). This is why it is necessary to apply a wholistic approach to answering these challenges (Pfahl, 2015).

Sound waste management and optimisation of resource recovery require reliable data on solid waste generation and composition. In the absence of standardised and commonly accepted waste characterization methodologies, various approaches have been reported in literature (Edjabou et al. 2015). When this is performed correctly, sources, quantity and composition of municipal solid waste and geographical distribution can be identified. Analysis is the essential first step towards sustainable and feasible long-term waste management strategy regarding reduction, treatment and disposal (Hristovski et al. 2007).

2.2 Inclusion of local stakeholders

Good policy development needs to include all stakeholders, disrespectfully of their degree of power and influence. More influential stakeholders or “key” stakeholders (Freeman, 1999) are usually powerful, knowledgeable and resourceful. Powerless stakeholders can exercise less influence but are also affected by the policy, and sometimes in a dramatic way (Bryson, 2004). Some interested stakeholders have in fact the power to affect the policy content, while others are relatively powerless but nevertheless are affected, sometimes in dramatic ways (Brugha & Varvasovszky, 2000).

For this occasion, we chose to apply the concept of Communities of Practice as group of stakeholders to interact with. The concept of Communities of Practice (CoP) was originally developed by Lave & Wenger (1991), who suggested that learning takes place in social relationships rather than through the simple acquisition of knowledge. CoP are groups of people who share a concern or a passion for something they do and deepen their knowledge and expertise

in this area by interaction and on an on-going basis (Wenger 1998, Wenger et al. 2002). They are considered a spontaneous, natural phenomenon among people of a similar trade who occasionally meet to learn from each other, and are characterized by three key dimensions: mutual engagement, joint enterprise and shared repertoire. In addition, there are four critical elements that make up a CoP (Wenger 1998, Wenger et al. 2002):

- Domain: a CoP has an identity defined by a shared domain of interest. Membership implies a commitment to the domain and, therefore, a shared competence that distinguishes members from other people
- Community: in pursuing their interest in the domain, members engage in joint activities and discussions, help each other, and share information. They build relationships that enable them to learn from each other. Having the same job or the same title does not make a CoP unless members interact and learn together.
- Practice: Members of a CoP are practitioners. They develop a shared repertoire of resources: experiences, stories, tools, ways of addressing recurring problems – in short, a shared practice. This takes time and sustained interaction.

A special group of stakeholders in this research are the fans and those who go to football games. Very often fans also need to travel to the game, sometimes being even visitors from abroad which already makes them tourists. Tourist or not, studies about the waste behaviour in relation to merely waste generation and/or waste management are almost non-existing. In the literature waste behaviour is seen as part of the more general environmental behaviour and/or sustainable behaviour (Budeanu, 2007). Research on mobility and travel behaviour at mega-events is still in its infancy and there is a general lack of baseline data and quantitative studies. (Malhado, 2013) The low support from customers is one of the main barriers for progress towards sustainable

tourism. One reason can be that existing initiatives are missing customers' attention, discouraging industry and governments to continue promoting sustainable tourism (Budeanu, 2007).

2.3 Roi Baudouin as the case study

The King Baudouin Stadium (French: Stade Roi Baudouin, Dutch: Koning Boudewijnstadion) is a sports ground in north-west Brussels, Belgium. It was inaugurated on 23 August 1930. Located in the Heysel section of the Brussels municipality, it was built to embellish the Heysel plateau in view of the 1935 Brussels International Exposition. The stadium hosted 70,000 at the time. A wooden track for cycling races was later added around the pitch.

As the stadium is a property of the City of Brussels (not the region) the management is a shared responsibility between several departments, such as the sports department and the department for cleanliness and waste management. Today the stadium has the capacity of 50.093 and hosted 8 games in 2018 with the total attendance of 278.644 (average attendance of 34.830 per game).

The city has also founded a separate body, Prosport, which is responsible for all the non-sportive events (e.g. concerts). The stadium has nearly no permanent infrastructure and equipment for different events making it very polyvalent in terms of different events it hosts. When it comes to football, the stadium hosts games of the Belgian national football team, Belgium Cup final and games of football clubs who are unable to play at their home stadium (due to reconstructions or other reasons), as it was the case with Union St. Gilloise during 2 seasons.

As the stadium is public, certain competences are shared between several departments of the city of Brussels. The stadium doesn't have any environmental standards or certificates in place. The Roi Baudouin stadium is currently lacking in several fields of environmental management, including governance, waste management and mobility and the monitoring of performances in this

field in general. This could open doors to improvements which would have significant achievement compared to the baseline scenario.

As the stadium's waste management performance is rather basic, with no separate collection but only general waste collection and litter collection in the stands and around the stadium, both the stadium and the Royal Belgian Football Association (RBFA) identified this field as a potential one for improvements. Considering the stadium's location, rather remote in terms of the city boundaries, mobility was another field that would receive attention.

Taking into consideration the former literature review, the circumstances and characteristics of the stadium as the study case and the preferences of the involved parties, the research questions this paper presents answers for are:

RQ1: What are the key waste management and mobility indicators which will shape the future decision making?

This paper presents two sets of results obtained through the research – the waste analysis and a nationwide survey on behaviours and waste management/mobility practices. These results would give an answer on the aforementioned question and give a good insight in the baseline scenario. These results would later pose the next question:

RQ2: Who are the stakeholders who need to be involved in the decision-making process?

Based on the results, the data and observations would help us identify the hotspots and key improvement potentials. Together with the stadium owner (City of Brussels in this case) and event organiser (Royal Belgian FA) we would identify and include appropriate stakeholders in order to

ensure equal participation and sound discussions. However, before decisions become official, we need to answer the third question, too:

RQ3: How to ensure that the decision made would meet the target group's expectations and needs and would result in expected participation?

The survey targeting football game goers would explore the willingness, expectations, needs of game goers, their opinions and above all enable us to compare their current waste management and mobility habits with those they are ready to adopt after implementing certain improvements.

3. Method and data collection

This research was conducted within an international project's framework – TACKLE (Teaming-up for A Conscious Kick for the Legacy of Environment). The project is supported by the European Commission's LIFE programme. From the perspective of what this research was about, the project looks at developing Guidelines for environmental management of football games which would be taken up by UEFA and deployed during the UEFA Euro Cup 2020. These Guidelines would be composed of both existing and new examples of good practices coming from all across Europe. The project started in 2018 and lasts for three years in total. The author of this paper comes from ACR+, one of the project partners responsible for providing technical support to some of the 10 pilot stadiums, such as Roi Baudouin in Brussels. UEFA participates as external partner supporting all the project activities.

The research methods used in this study, which complement each other, are a waste composition analysis and a survey. Results from these two methods feed into the participatory decision-making process.

In order to analyse the baseline scenario, based on business-as-usual one football game was chosen for waste composition analysis: the European Qualifiers between Belgium – San Marino on 10 October 2019. Since all the waste currently generated during a football game gets collected with all the other waste coming from the residential areas in the stadium's imminent neighbourhood, an area with well-defined boundaries was set up in order to isolate the waste associated with the football game. The waste analysed was divided into three categories, based on the previously agreed lay-out of the research:

- Inside the stadium's premises (A)
- Outside the stadium's premises – public area: public trash bins (B)
- Outside the stadium's premises – public area: litter (C)

The results were later presented to the Community of Practices which was set up for this occasion. This Community spanned from public authorities, non-profit organisations to private enterprises. The following stakeholders took part in the Community:

- RBFA – the stakeholder who is the event organiser at the same time at the Roi Baudouin stadium, responsible for all the logistics
- City of Brussels – one of the Brussels region's 19 municipalities, as the owner of the stadium
- Prosport – an organisation founded by the City of Brussels which is in charge of all non-sportive events in the stadium
- Brussels Environment – the regional authority for environment
- Brussels Public Cleanliness – the regional waste management authority

- Fostplus – the national non-profit organisation in charge of packaging and packaging waste management
- Coca-Cola – the official provider of soft drinks during football games
- AB InBev – the official provider of alcoholic drinks during football games
- Bevers & Bevers – the official provider of food during football games
- Suez – a private waste collection company

Meetings took place on the following dates: 26 June 2019, 17 September 2019, 4 November 2019, 25 November 2019.

Furthermore, over a four weeks' period, the Official Belgian Fan Club – 1895 Belgium Fan Club with ACR+'s support conducted a survey which resulted in an overview of football game goers' habits in waste management and mobility. Nonetheless a part of the survey also looked at the respondents' view and opinions on how much environmental management is important in the world of sports and football in particular. The survey was divided into the following 4 sections:

- Respondents' general data
- Respondents' waste management behaviour assessment and assessment of their needs
- Respondents' mobility behaviour assessment and assessment of their needs and challenges
- Respondents' points on view on environmental management in football events in general

The survey was conducted online in order to reach out to game goers from all three regions of Belgium. Studies say that one advantage of online survey research is that it takes advantage of the ability of the Internet to provide access to groups and individuals who would be difficult, if not impossible, to reach through other channels (Garton et al, 1999). We used the Likert scale is used to measure attitude, whose standard format consists of a series of statements to which the

respondents express their agreement or disagreement. This level-of-measurement characteristic together with ease of administration and response explains its popularity in marketing research applications (Albaum 1997). In this survey's case, the statements were followed by a five-level scale, which stretched from 1 (strongly disagree) to 5 (strongly agree). The survey can be seen in Annex I.

4. Results

The waste sampling took place according to the previously described methodology and the total amounts of waste collected and analysed for their mass composition were as shown in Table 1 below.

| ZONE | COLLECTED AMOUNT | ANALYSED AMOUNT | SHARE OF ANALYSED VS COLLECTED |
|--------------|-------------------------|------------------------|---------------------------------------|
| A | 1380 kg | 287 kg | 20.7% |
| B | 780 kg | 192 kg | 24.6% |
| C | 470 kg | 165,5 kg | 35.2% |
| Total | 2630 kg | 644.5 kg | 24.5% |

Table 1. The amounts of waste collected and analysed for their composition after

The three different areas of collection gave different results in mass composition. The findings are presented below in Figures 1, 2 and 3.

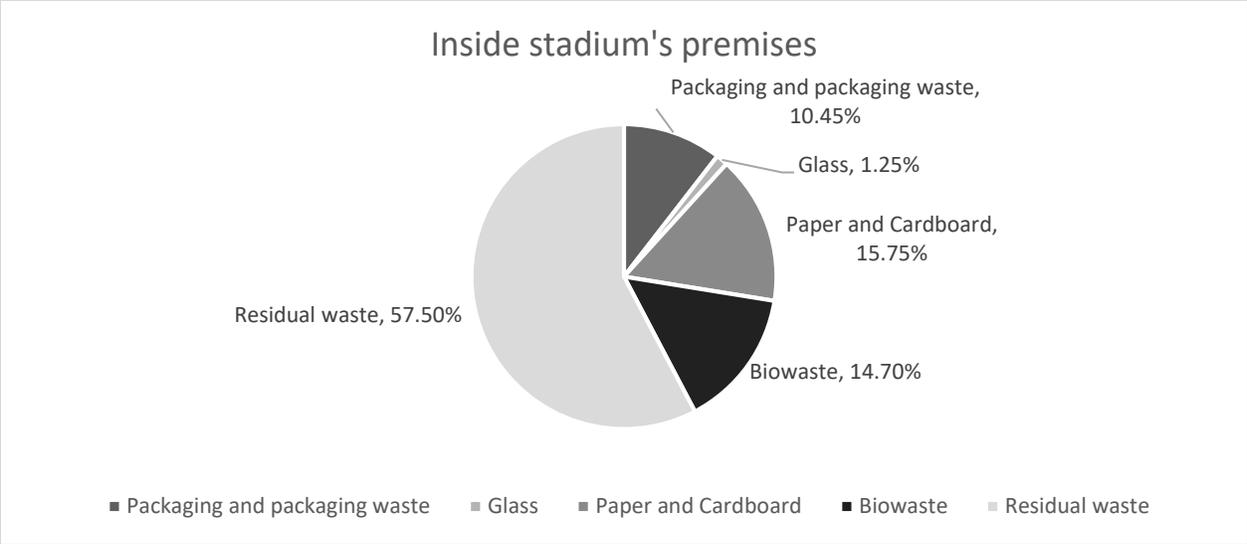


Figure 1. Mass composition of the waste sample collected inside the stadium's premises (Category A)

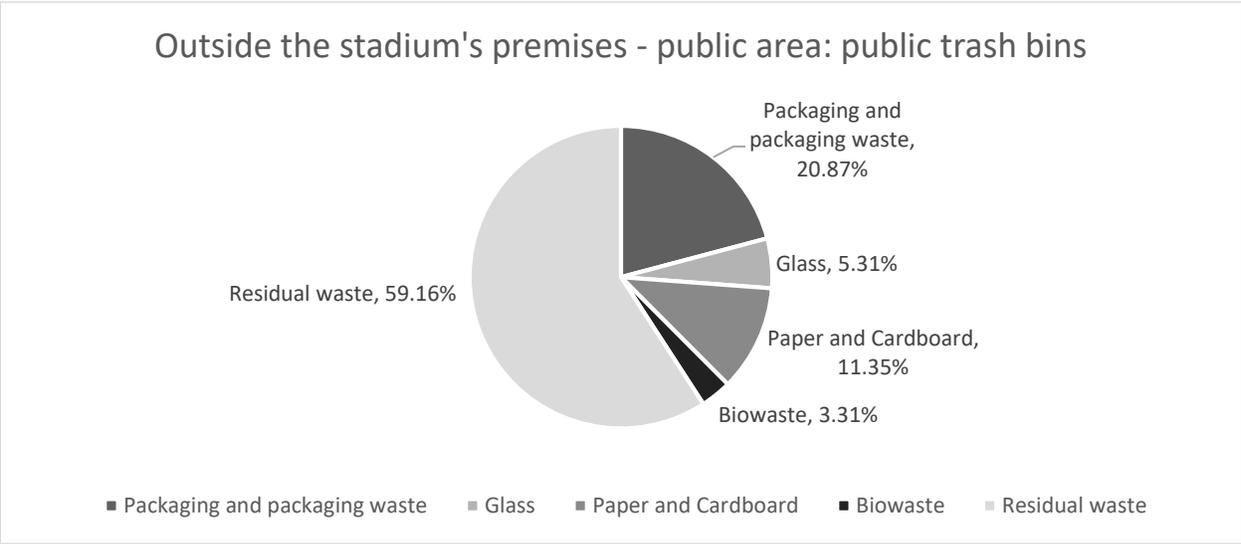


Figure 2. Mass composition of the waste sample collected outside the stadium's premises in public area in public trash bins (Category B)

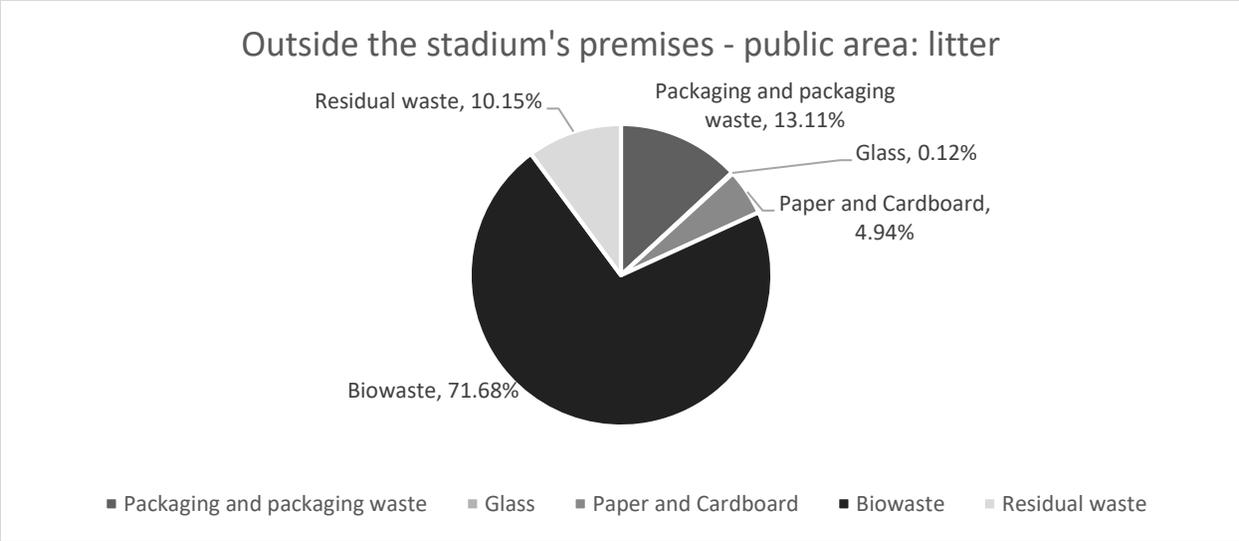


Figure 3. Mass composition of the waste sample collected outside the stadium's premises as litter (Category B)

As the objective of this analysis was to identify hotspots and prevalent waste streams in different areas, further observations were made concerning specific waste streams when the different areas were compared. Packaging and packaging material were of special concern in order to assess quantities of metal, PET and other packaging and packaging waste materials. It was found that out of all the collected metal cans in the three areas 64% come from public trash bins outside the stadium's perimeter, while PET bottles were prevailing inside the stadium's perimeter (76%). The high share of biowaste collected as litter was declared irrelevant as it contained a lot of foliage, as the analysis took place in autumn. The results in general reflect the current practices during football games, where metal cans are not allowed inside the stadium's perimeter, thus they end up primarily in public trash bin and as litter, as the number of installed public trash bins and their capacity are not adapted to the amount of waste generated on matchdays.

These results, which were obtained through the analysis carried out by Fostplus and Brussels Public Cleanliness were later shared with the rest of the Community of Practice. In the meantime, over a four weeks' period, 234 respondents completed the survey. The 232 responses came from all three regions of Belgium – Brussels (14 responses), Flanders (181) and Wallonia (39). In terms of gender, 165 males and 67 females completed the survey.

We also wanted to know more about the respondents in order to be able assess their responses better and link them to their residence and age. Table 2 gives further breakdown of the responses.

| How often do you attend home games of the Belgian national team? | | | | | |
|-------------------------------------------------------------------------|---------|----------|----------|-----------|---------|
| 1-2 | | 3-5 | | >5 | |
| 139 | | 55 | | 40 | |
| What distance do you need to travel from home to the stadium? | | | | | |
| <5 km | 6-15 km | 16-30 km | 31-60 km | 61-100 km | >100 km |
| 10 | 24 | 31 | 78 | 66 | 25 |
| What is your age? | | | | | |
| 15-24 | 25-34 | 35-44 | 45-54 | >55 | |
| 31 | 33 | 80 | 52 | 38 | |

Table 2. The structure of the respondents based on their age, distance from the stadium and frequency of attending home games

The survey was constructed in a way that would allow us to understand the respondents waste management and mobility habits. Figure 4 shows how often did the respondents do the following things in their homes and at work, with 1 symbolising “never” and 5 symbolising “always”.

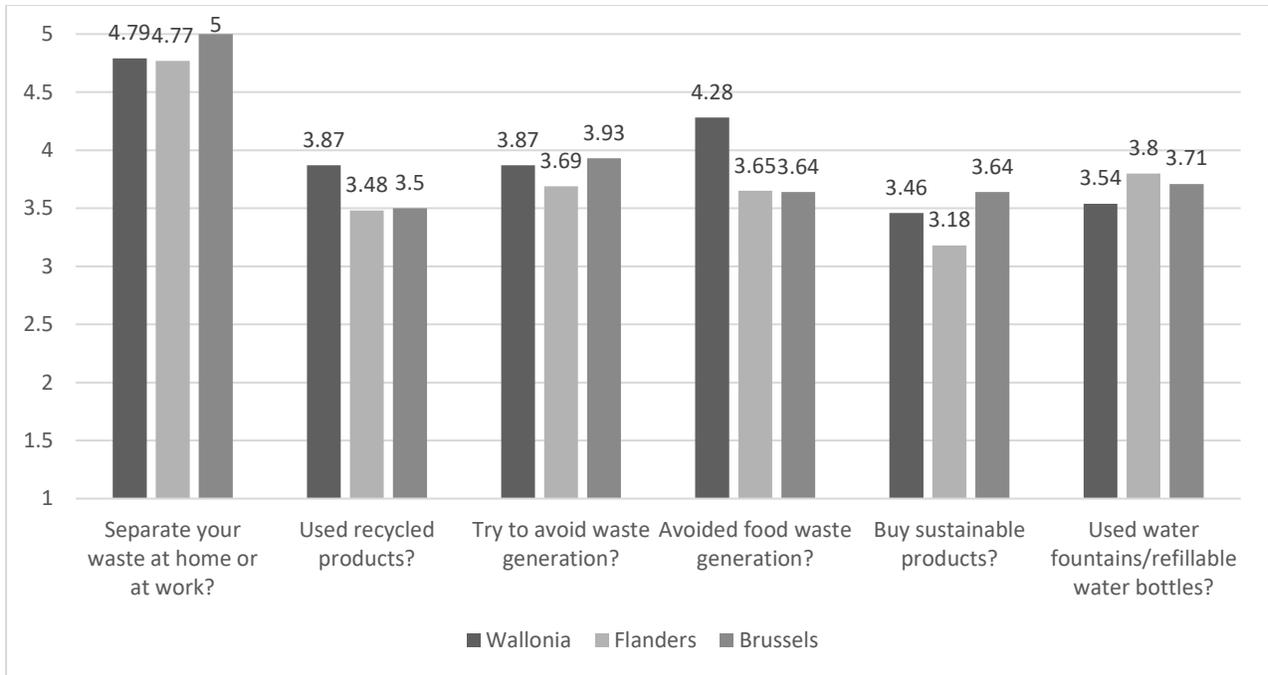


Figure 4. In the last six months, in your private life, how often did you do the following things?

When asked whether the following improvements in the stadium would improve their environmental performance and reduce their environmental impact during their visit to the stadium, the respondents gave the following score to the proposed improvements, as in Figure 6m 1 being “strongly disagree” and 5 “strongly agree”.

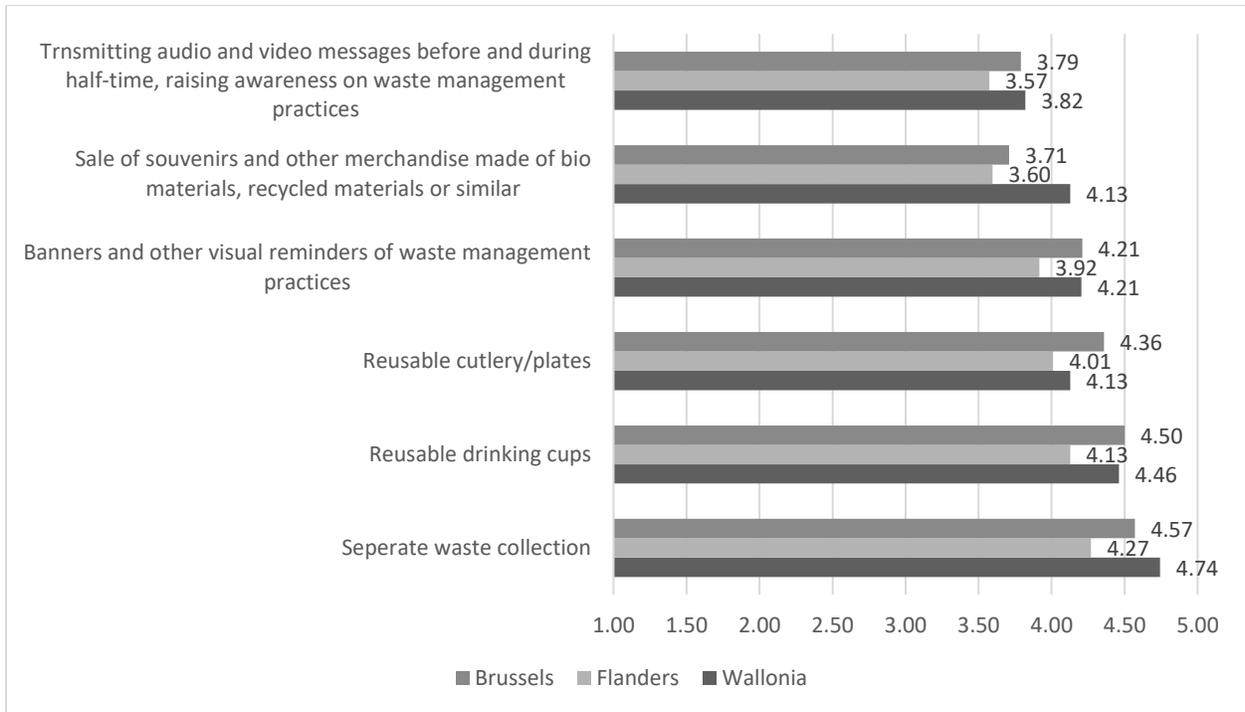


Figure 5. How much would the following improvements in terms of waste management help you improve your waste management practices and decrease your environmental impact during football games?

Comparing the respondents’ responses on their everyday behaviour and potential improvements the new waste management practices in the stadium would bring, 71.8% of respondents from Flanders would indeed improve their waste management performances compared to their everyday habits. Somewhat less Walloons (67.4%) and Brussels residents (61.5%) would perform better during the football games than usual.

Since reusable cups and reusable cutlery/plates scored very well in Figure 5, we wanted to see how many respondents were strongly agreeing with this particular potential improvement. 69.2% of respondents from Brussels did so, 66.9% Flemings and 66.7% Walloons.

When it comes to mobility, we analysed the results according to the respondents' residence place and the distance from the stadium. We wanted to find out what were the respondents' main transportation options when travelling to football games. Figures 6a, 6b and 6c show the results according to the three regions (Brussels, Wallonia and Flanders, respectively) and distances from respondents' residences to the stadium.

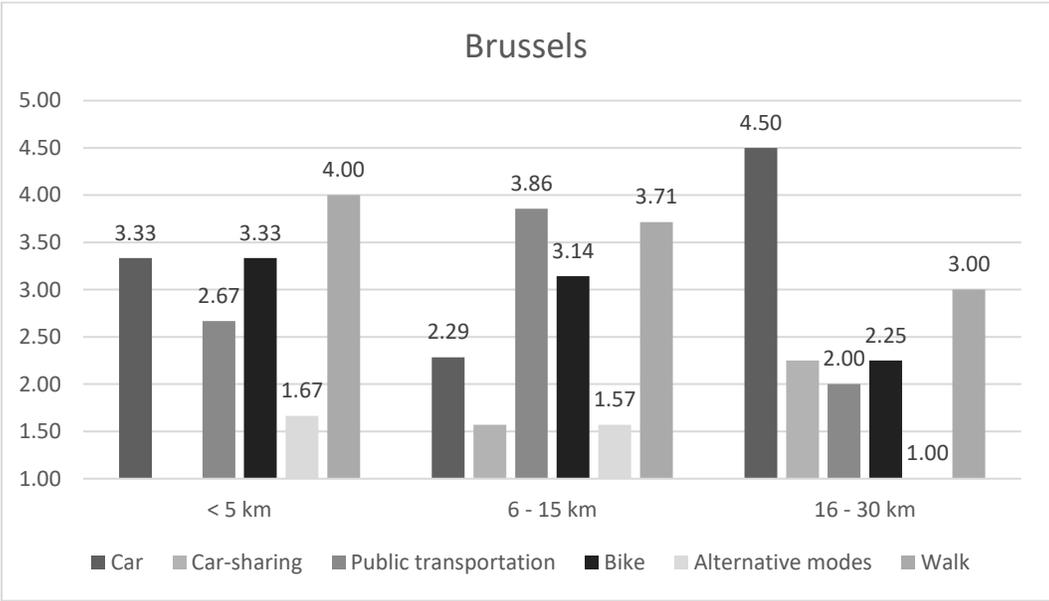


Figure 6a. During the last 6 months, what was your most used mean of transport and travel option to the stadium?

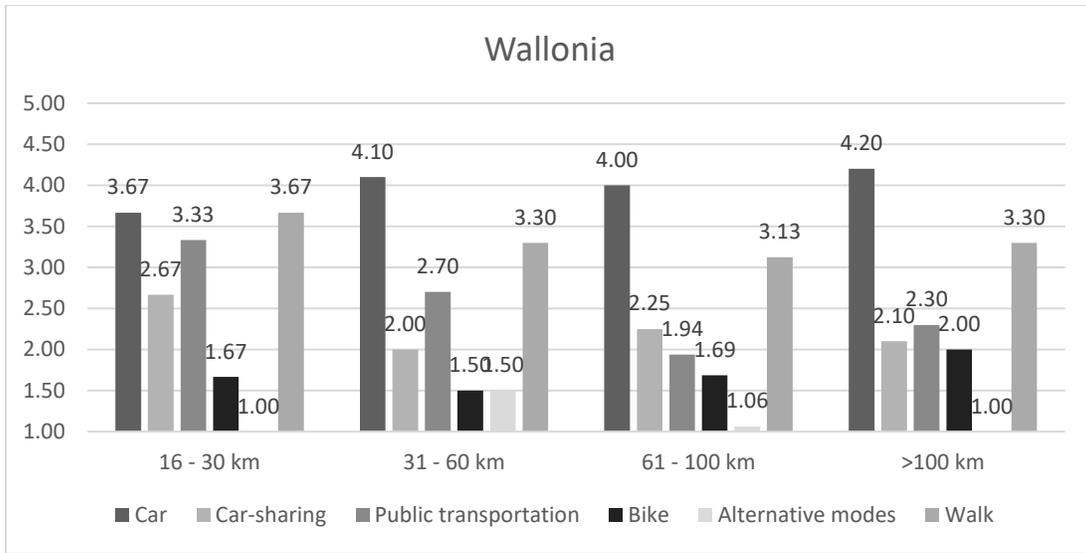


Figure 6b. During the last 6 months, what was your most used mean of transport and travel option to the stadium?

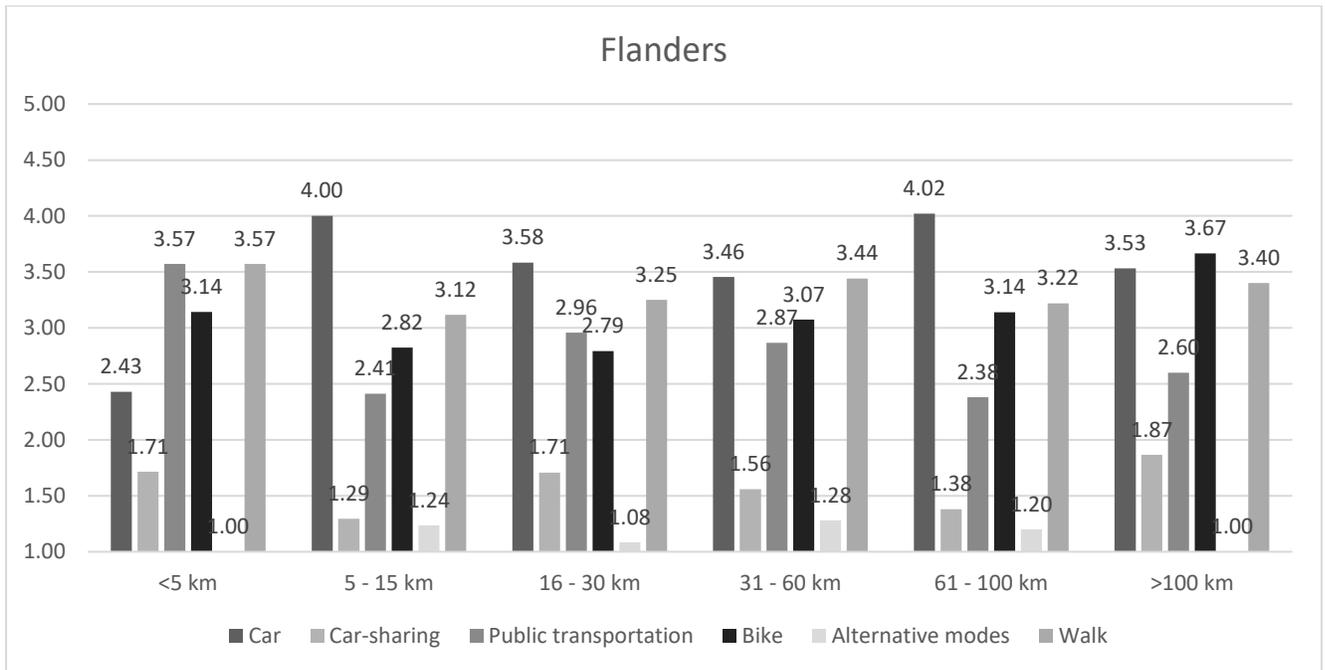


Figure 6c. During the last 6 months, what was your most used mean of transport and travel option to the stadium?

When asked how much would the following potential improvements in mobility facilitate the respondents' travel to the stadium and how much would they improve the respondents' performances in mobility in terms of reducing their environmental impact, the three potential improvements resulted in different scores. A parking space dedicated to car sharing would be most beneficial for visitors from Wallonia and Flanders, as the level of agreement of Walloons was 3.18 and 3.01 in case of Flemings. Brussels residents find it less interesting as the level of agreement was only 2.79. However, a secured bike parking was something Brussels game-goers would like to see as they agreed it would improve their mobility performance (4.25), while the residents of the other two regions wouldn't agree much (2.82 in case of Wallonia and 2.85 in case of Flanders). An event-pass, which would allow the game-goers to use public transportation for free with their game ticket would decrease visitors environmental impact as they would have access to free public transportation options. The level of agreement for this potential improvement was high in all cases, 4.20 for respondents from Flanders, 3.93 for respondents from Brussels and 3.87 for those from Brussels.

Apart from those respondents who already use bikes, public transportation or car-sharing, being considered as mobility options with a lower environmental impact, we wanted to know how many more visitors would use these means of transport if they were incentivised. If there was a secured bike parking at the stadium, 61.5% of respondents from Brussels would consider cycling to the stadium, but only 56.4% and 30.4% from Wallonia and Flanders, respectively. If there was an event-pass system in place, 77.4% of Flemings would consider using it, 66.7% of Walloons and 53.8% of Brussels residents. As for a dedicated priority parking for car-sharing and shared vehicles, 71.8% of respondents from Flanders would consider opting for car-sharing solutions, 61.5% of respondents from Brussels and 48.7% from Wallonia.

The last part of the survey had the objective of investigating the game-goers' opinions on the importance of environmental management in football and the environmental priorities the football game organiser should take into consideration when organising them. Figure 7 shows the list of priorities ranked according to the level of agreement.

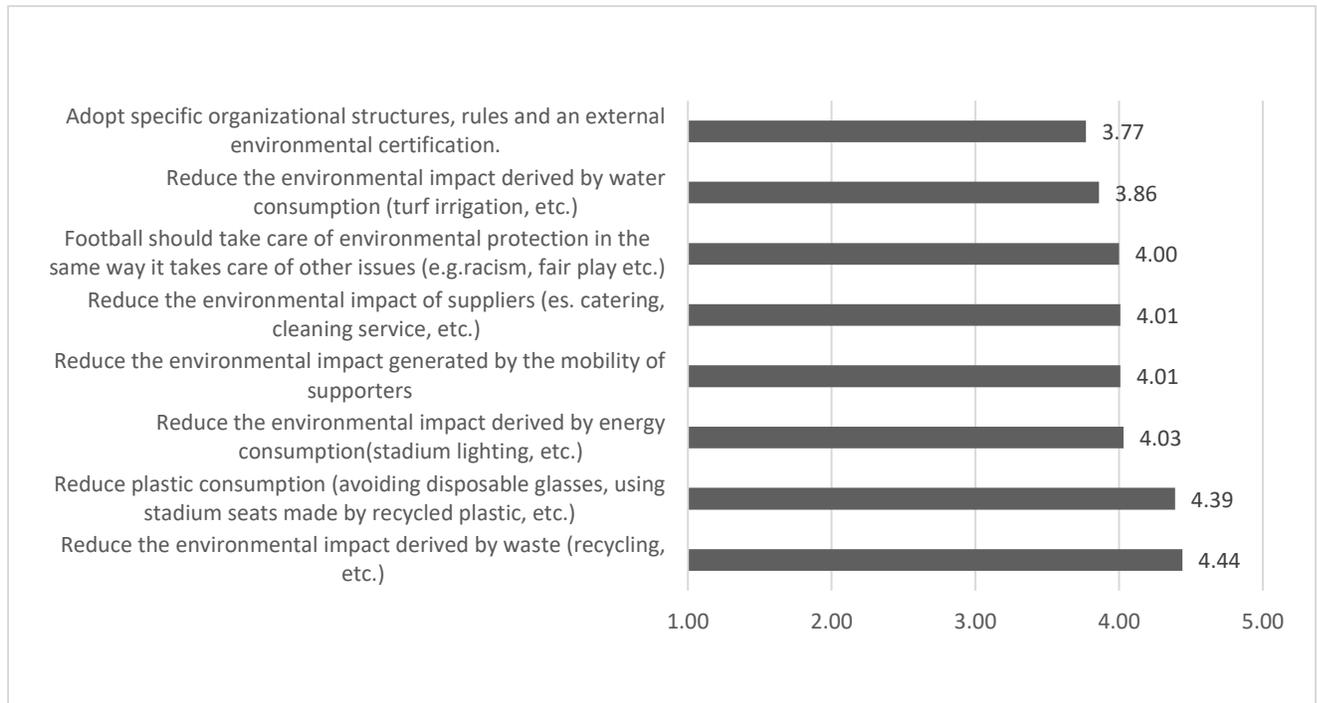


Figure 7. The level of agreement with different priorities football game organisers could take into consideration when organising games

Based on the results of the two analysis, the one on waste composition and the survey on waste management and mobility habits the Community of Practice came together to discuss potential improvements which would take place in 2020. The list of improvements to be implemented contains:

- Separate waste collection inside the stadium's perimeters

- Renewing the catering contracts through a new call for offers which would include more sustainable business practices
- Installing a secured bike parking
- Designating a part of the car park and facilitating the arrival and departure of vehicles used in car-sharing
- Introduction of reusable cups
- Introduction of an “event-pass”

5. Discussion

The first meeting of the Community of Practices served as a good opportunity to list all the competences and skills the Community had and which could be beneficial for the waste and mobility assessment of football games at Roi Baudouin stadium. Those who stepped up to lead the initial assessment phase were Fostplus and the Brussels Public Cleanliness for the waste composition assessment and ACR+ and the Belgian Royal FA for the survey. It was agreed within the Community that the other stakeholders would rather participate in the discussion and take steps in order to reduce the environmental impact once the results would be known.

The results above show us some interesting findings concerning waste generation and composition during a football game. The objective of the analysis was primarily to identify the waste streams and hotspots which could be targeted by waste management improvements. We found that the waste composition varies from area to area. Due to certain security and safety reasons, the waste composition inside and outside the stadium’s perimeter is affected which is also visible in the results. Packaging and packaging waste which dominates outside the perimeter included mainly

aluminium cans and PET bottles, as they are forbidden to be brought inside the perimeter. The public trash bins are the main recipient of aluminium cans as 64% of the total amount sampled came from there. Once full, they overflow and aluminium cans become litter, as we can see in the composition of sampled litter (still dominant share of 13.11%).

On the other hand, inside the stadium's perimeter the large share of packaging and packaging waste (10.45%) is mainly due to a large number of PET bottles which soft drinks and water are served in. In fact, we saw that 76% of PET bottles collected during the game originated from inside the stadium's perimeter. Paper and cardboard had a big share, as well, but it was rather due to the food and beverage providers and the drinks and food packed in cardboard boxes. The visitors' activities generate barely any paper and cardboard waste.

These results, once presented to the Community of Practice, initiated a discussion between the stakeholders and what each stakeholder could bring to the table as a temporary solution, further analysis of the lacks of business-as-usual etc. We have seen opinions coming from the stakeholders which were primarily affected by their business models and the experience their customers have. The solutions for improving their environmental performances must go hand in hand with their successful business models. Fostplus, which is the responsible entity in Belgium for the collection and recycling of packaging and packaging material was concerned by the large number of aluminium cans in public areas which do not get collected. Therefore, Coca-Cola and AB InBev decided to create eco-teams in order to increase the capture rates of this waste through sensibilisation, setting up temporary trash bins as a temporary solution during this phase of the project. These results also affected the practices inside the stadium's perimeter, namely the collection of packaging and packaging waste as it was collected together with residual waste until now. SUEZ stepped forward and diversified the available waste disposal options within the

stadium's perimeter with a large capacity bin for packaging and packaging waste. Bevers & Bevers, responsible food and beverage serving decided to run a test phase of collecting empty single use cups which would be forwarded to SUEZ for recycling. A visitor would get a free drink for 10 single-use cups collected. During the following game, 6730 cups were collected.

When it comes to the survey and its results, they played an important role in feeding the discussion with some intelligence on game goers' behaviour and attitudes. It helped not only to complement the observations made through waste sampling and its consequent analysis. Although the share of respondents from different regions in Belgium wasn't equal, we analysed their responses and we saw that respondents from Brussels had somewhat higher environmental consciousness on average compared to their counterparts in Wallonia and Flanders. This reflected in the results when assessing the added value of improving waste management practices in the stadium – due to a high environmental consciousness, a smaller number of respondents from Brussels than from any other two regions would experience an improvement in their environmental performances on a daily basis as they perform already well and given the current practices in the stadium – even better in their private life than in the stadium. However, the survey showed that improvements in environmental management, waste management in particular in the stadium would have an added value with the visitors from Flanders and Wallonia as 71.8% and 67.4% of respondents respectively would have better environmental performance during football games than in private life.

When asked to express their level of agreement with some of the proposed improvements, reusable cups and reusable or biodegradable cutlery and plates topped the list among others which we attributed to items visitors consume the most (single use cups and other food containers). At the

same time, these are the most common items disposed of as packaging and packaging waste which appeared in the waste composition analysis.

These findings and responses the direction the Community of Practices was going in, when it comes to waste managements and proposed improvements. The fact that the City of Brussels and later on the Region of Flanders, had officially banned single use products from all events on their territories after several years of transition which helped residents to get acquainted with these new practices, the implementation of reusable cups and reusable or biodegradable cutlery and plates wouldn't pose any inconvenience to the visitors.

In terms of mobility, the responses coming from the different regions, but also from respondents who have to travel different distances to the game led to several different discussion points. Before we look into specific observations for each of the regions, what was common for all the three was the decrease of the use of public transportation with the distance and increase of car use and to some extent, car-sharing. This can be easily explained with the fact that longer distances often include changes from one mode of public transportation to another which increases the time of travel. In individual responses to the most challenging things when travelling to games, this topped the list along with another fact that makes public transportation less attractive especially once the game is over. The fact that football games often end late in the evening leaves the visitors without any choice of public transportation to return to their residence which is further than 60 km away. When it comes to walking, in case of responses from Flanders and Wallonia, the trends follow very clearly the use of public transportation, as these two modes of transport accompany each other when going from one place to another.

In case of Brussels, where the stadium is located, certain discussion points could apply to this region, too. Public transportation and walking, as well as cycling becomes less favourable with distance, as some visitors still have to travel up to 30 km. Taking a car or participating in car-sharing becomes more favourable, as they cross these distances faster.

General observation for the three regions is that intermodal transport becomes less and less interesting with the distance and gets replaced by car and car-sharing to some extent. When asked if a dedicated parking for shared cars would make the respondents consider car-sharing, it did raise some interest among respondents from Flanders and Wallonia (3.01 and 3.18, respectively). The fact that these respondents, together with the respondents from Brussels still agreed more that an “event-pass” would make them decrease their footprint when attending a game by using public transportation. Compared to a dedicated parking to shared cars, and event pass scored much better in all three regions. Only respondents from Brussels agreed nearly very strongly a secured bike park would decrease their footprint when attending the game, which was expected by the surveyors.

The discussion on potential mobility improvements had to be looked at from the perspective of different regions. The City of Brussels, as a part of the Community of Practice decided to partition the general parking space and dedicate a part of it to shared cars which would facilitate their arrival and departure from the stadium and also introduce an “event-pass” in collaboration with the public transportation company in Brussels region. Brussels regional Mobility authority on the other hand took the responsibility of providing a secured bike park in order to increase the number of game-goers from Brussels coming to the games on bikes.

In general, the last part of the survey which was investigating general feelings and opinions on the place of environmental management in football games confirmed the intentions of the Community of Practices which previously identified waste management and mobility as key priorities for improving environmental management.

6. Conclusions

This decision-making process, which included a wide range of stakeholders, was proven to be meaningful, reasonable and beneficial for those involved in them. This study furthermore confirms some previously acquired knowledge and findings in other studies on how to set up and run inclusive and participatory decision-making processes (Acacia, 2013, Babiak and Trendafilova, 2011, Bryson, 2004). In this study's case, the positive trends in terms of assessing the environmental management and the impact different practices have on environment apply as well, since the Community of Practices confirmed the motivation of various entities for doing such an assessment.

One of the objectives this study had was investigating the need of a holistic approach to environmental sustainability (Mallen et al., 2010). This particular process, described in this study, wanted to explore the opinions, needs and behaviour of football game-goers as the primary target group in the decision-making process. The study wanted to see to what extent decisions made through the Community of Practices based on the initial assessment of waste composition and visitors' behaviours actually meet the real needs of the target group and whether these decisions could bring an added value. It was proven that if the Communities of Practices, as a participatory and inclusive decision-making process are fed with field information, data and findings obtained in situ the process will result in suitable decisions and decision that could have a wide range of

added values. When it comes to the assessments in particular, we were able to make few observations, too. When sampling the waste for the subsequent composition analysis in order to obtain what kind of waste is generated, when and where during an event (football game in our case), it is advised to identify a similar event of that kind and do the sampling and analysis in real time in order to obtain the most reliable data. System boundaries are important and partitioning the area of interest into smaller areas with specific characteristics (areas with certain items banned, public vs private areas etc.) helps the researchers to identify hotspots and look for solutions specific to these hotspots. The survey this research included was done online which allowed the researchers to reach out to respondents who come from different parts of the targeted area (Belgium in this case). Using channels which would ensure a representative sample of the target group is highly advisable as that eliminates irrelevant responses, in our case – from respondents who don't attend football games. Choosing the official fan club of the Belgian national team allowed us to have only game-goers in our sample.

Cross-sectoral cooperation and involvement of representatives from different sectors, whether private or public, is utmost important in such decision-making processes in order to make sure decisions are in line with existing policies. On the other hand, presence of policy-makers in these processes have the added value of influencing future policies which could be built upon field research and other indicators.

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| | Never | Rarely | Sometimes | Often | Always |
|--------------------------------------------------------------------------------------------------------------------------------|-------|--------|-----------|-------|--------|
| Prevent food waste | | | | | |
| Purchase sustainable products (buying products with environmental certifications, second-hand products, organic products etc.) | | | | | |
| Use water fountains/water flasks | | | | | |

Would the following improvements in waste management in Roi Baudouin help you improving your waste management behaviour and decrease your environmental impact during football games?

| | Not at all | Unlikely | Maybe | Likely | Definitely |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------|-------|--------|------------|
| Separate waste collection | | | | | |
| Reusable cups | | | | | |
| Reusable or biodegradable cutlery/plates/packaging | | | | | |
| Water fountains | | | | | |
| Sale of match memorabilia and other Belgian teams' merchandise (shirts, flags, scarves etc.) made of organic materials, recycled materials or similar | | | | | |
| Informative banners and signs on waste collection inside and outside the stadium | | | | | |
| Screening informative videos on waste collection and management before matches and during breaks | | | | | |
| Audio announcements and reminders during the half-time on waste collection and management during the breaks | | | | | |
| Rewarding pro-environmental behaviours (e.g. by offering discounts on tickets) | | | | | |

This part of this survey is on mobility patterns in your daily life and during football games

In the past six months, how often did you use the following means of transport in everyday life or coming to football games:

| | Never | Rarely | Sometimes | Often | Always |
|----------------------------------------------------------|-------|--------|-----------|-------|--------|
| My car | | | | | |
| Participate in car-sharing (incl. car sharing platforms) | | | | | |
| Public transport (STIB/MIVB, De Lijn, TEC, SNCB/NMBS) | | | | | |
| Bicycle (incl. e-bicycles) | | | | | |
| Unconventional mobility (scooters, skateboard ...) | | | | | |
| Walk | | | | | |

What is the main challenge you face when coming to the game in terms of mobility?

Would the following mobility improvements at Roi Baudouin help you improving your mobility options when going to the football games and decrease my environmental impact (OR would you be willing in participating and taking advantage of the following improvements at Roi Baudouin stadium):

| | Not at all | Unlikely | Maybe | Likely | Definitely |
|-----------------------------------------------------------------------------------------|------------|----------|-------|--------|------------|
| A parking dedicated to car-sharing | | | | | |
| A secured bike parking | | | | | |
| An "event pass" for STIB/MIVB, De Lijn, TEC (a free ride to and from the football game) | | | | | |
| | | | | | |

The first part of this survey is on your general expectations and opinions on environmental management during football games

Indicate your level of agreement with the following statements.

| | Totally disagree | Disagree | Indifferent | Agree | Totally agree |
|-----------------------------------------------------------------------------------------------------------------------------------|------------------|----------|-------------|-------|---------------|
| Football should take care of environmental protection in the same way it takes care of other issues (e.g. racism, fair play etc.) | | | | | |
| If I knew a football match was environmentally friendlier, I would be happier to attend it | | | | | |

Football teams and stadium owners should devote their efforts to:

| | Totally disagree | Disagree | Indifferent | Agree | Totally agree |
|--------------------------------------------------------------------------------------------------------------|------------------|----------|-------------|-------|---------------|
| Reduce the environmental impact generated by the mobility of supporters | | | | | |
| Reduce the environmental impact derived by water consumption (turf irrigation, etc.) | | | | | |
| Reduce the environmental impact derived by energy consumption (stadium lighting, etc.) | | | | | |
| Reduce plastic consumption (avoiding disposable glasses, using stadium seats made by recycled plastic, etc.) | | | | | |
| Reduce the environmental impact derived by waste (recycling, etc.) | | | | | |
| Reduce the environmental impact of suppliers (es. catering, cleaning service, etc.) | | | | | |
| Adopt specific organizational structures, rules and an external environmental certification. | | | | | |

When I attend a football match at Roi Baudouin stadium,

| | Totally disagree | Disagree | Indifferent | Agree | Totally agree |
|-------------------------------------------------------------------------------------------------|------------------|----------|-------------|-------|---------------|
| It's up to me to decide whether to take environmentally friendly actions | | | | | |
| The stadium's environmental management practices prevent me to be more environmentally friendly | | | | | |
| My environmentally friendly efforts are useless as long as other people refuse to collaborate | | | | | |
| There is not much that I can do individually to protect the environment | | | | | |