



'GOING FOR GREEN'

A CHECKLIST FOR ORGANIZING SUSTAINABLE EVENTS AT WUR

*Create an advice on how to organize - and how to stimulate stakeholders to
organize - events at Wageningen University & Research in a more sustainable
way.*

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Executive summary

Green Office Wageningen (GOW) aims at improving sustainability at Wageningen University & Research (WUR). Recently, GOW has been contacted by different event organizers requesting information on how to organize events sustainably at WUR. However, GOW is unable to deliver such an advice because scientific knowledge on organizing sustainable events is not readily available. For this reason, the purpose of this project was to gain evidence-based knowledge on how to organize an event in a sustainable way and to translate this knowledge into a checklist that can be used by all event organizers organizing at WUR. In order to provide an answer to the main question, *In what way can events at Wageningen University & Research be organized more sustainably?*, a literature study, content analysis and stakeholder interviews were conducted. On the basis of the results, a scientific report is delivered. The scientific report consists of five parts. Firstly, the most important aspects when organizing sustainable events are identified. The aspects with the biggest environmental impact were found to be transportation, catering, communication and event materials, waste, and energy. Secondly, existing best practices for these aspects and the environmental impact of implementing these practices were found. Thirdly, the current sustainable practices at WUR were found. Fourthly, opportunities to improve and benefits and constraints in improving sustainability at events at WUR were found. Lastly, ways to motivate event organizers to improve sustainability at their events are found. Apart from the scientific report, a second output is delivered. The second product that is delivered is a checklist. This checklist is based on the scientific report and provides a clear overview of what event organizers are recommended to do when organizing a sustainable event. The checklist focuses on the five aspects that were found to be most important in terms of their environmental impact.

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Introduction

During the past decades, the global event industry has experienced continuous growth regarding the number of events and the number of people attending (Dickson & Arcodia, 2010b). Despite the continuing growth within the event industry, relatively little attention has been paid to the potential negative impacts events can have on the environment (Collins, Jones, & Munday, 2009; Dickson & Arcodia, 2010a). This is a lost opportunity, especially because “events have the potential to be model examples of harmonious balance between human activity, resource use and environmental impact” (Jones, 2014, p. 3). Examples of such event-related negative environmental impacts are the ecological footprint of travelling; food and drinks; infrastructure; and waste (Collins et al., 2009).

Based on the 2012 standard for sustainable event organization developed by the International Organization for Standardization (ISO), an event can be defined as “a planned gathering with respect to time and a place where an experience is created, and/or a message is communicated” (International Organization for Standardization, 2012). In academic literature, the terms ‘sustainable events’ and ‘green events’ are used interchangeably. A green or sustainable event can be defined as an event that has a clear sustainability policy or incorporates sustainable practices into its management and operations (Laing & Frost, 2010). In order to analyze sustainable practices (Laing & Frost, 2010) within an event, it is important to explore what it means to organize sustainably. The United Nations Environmental Program (UNEP) Guide on Sustainable Events (2012) states that a sustainable event balances environmental, social, and economic responsibilities. These three different pillars of responsibility are also known as the ‘triple bottom line’ (Musgrave & Raj, 2009). The three dimensions of the triple bottom line can also be referred to as ‘people, planet, profit’ (Jackson, Boswell, & Davis, 2011). Besides these three pillars, some authors identify a fourth dimension. For example, in Sustainable Event Management by Jones (2014), the author identifies a cultural dimension. Jones (2014) perceives the cultural dimension as a fourth pillar and therefore uses a ‘quadruple bottom-line’.

Within this study, the well-known ‘triple bottom line’ framework will be used as a starting point. The triple bottom line was introduced by John Elkington as a framework to measure sustainability (Slaper, 2011). The framework was initially meant to measure the performance of corporations in the United States, moving “beyond the traditional measures of profits, return on investment, and shareholder value” (Slaper, 2011, p. 4). Besides the economic dimension, the environmental and social performance of a corporation were now included in an evaluation framework. Over time, interest in the triple bottom line approach grew and many different organizations (businesses, nonprofit organizations and government sectors) have adopted the framework in order to evaluate their performance (Slaper, 2011). The triple bottom line can be referred to as an approach in which actors “harmonize their efforts in order to be economically viable, environmentally sound and socially responsible” (van Marrewijk, 2003, p. 103).

For each of the three dimensions included in the triple bottom line, positive and negative impacts can be identified. Musgrave and Raj (2009) explored the impacts of events in terms of the three dimensions. For the social dimension, a positive impact of an event can for example be ‘community development’ while a negative impact could be a ‘disruption of lifestyle’. Regarding economic impacts, ‘additional trade and business development’ can be seen as a positive impact of an event while the ‘unequal distribution of wealth’ can be seen as a negative impact. Focusing on environmental impacts, a positive impact of an event could be ‘raising awareness of environmental issues’, while a negative impact could be ‘waste and pollution’. See figure 1, for more examples of impacts of events for each of the three pillars.

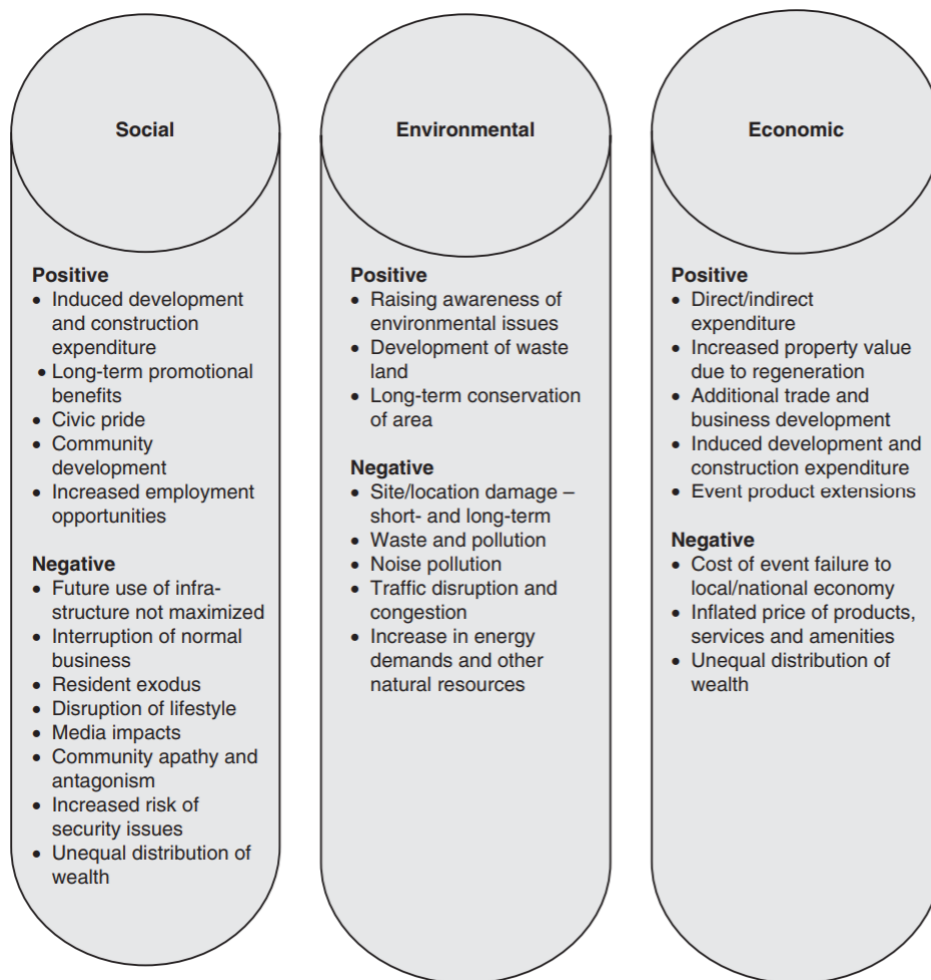


Figure 1: The three pillar impacts of events (Musgrave & Raj, 2009, p. 5)

So far, research on the impacts of events has mostly focused on the economic pillar (Collins & Cooper, 2016; Rich, Tomas, Canberg, & Smith, 2011). Less studies have focused on the assessment of social and cultural impacts. Furthermore, academic literature considering environmental impacts is scarce (Collins & Cooper, 2016; Rich et al., 2011) as relatively little attention has been paid to the potential negative impact events can have on the environment (Collins, Jones, & Munday, 2009; Dickson & Arcodia, 2010a).

Moreover, according to Dickson and Arcodia (2010b) encouragement and support of event managers to organize their events in a sustainable way can be improved. In addition, a practical framework that can be used by event organizers to regulate or reduce the environmental impact of their events is not readily available (Arcodia & Cohen, 2007).

At Wageningen University & Research (WUR), a practical framework that can be used by event organizers to reduce the environmental impact of their events is also not available. At WUR, Green Office Wageningen (GOW) aims at improving sustainability. Recently, GOW has been contacted by different event organizers requesting information on how to organize events sustainably at WUR. GOW was unable to deliver such an advice because they did not have the scientific knowledge on organizing sustainable events. Therefore, the purpose of our project was to gain evidence-based knowledge on how to organize an event in a sustainable way and to translate this knowledge into a checklist that can be used by all event organizers. This project has delivered two outputs. Firstly, a scientific report is delivered. This report mainly outlines the most important aspects to consider when organizing a sustainable event and how event organizers can improve on these aspects. The second product we

delivered is a checklist. This checklist follows from the academic report and gives a clear guideline on what event organizers should do in order to organize their event as sustainable as possible.

The main research question that is answered is the following: *In what way can events at Wageningen University & Research be organized more sustainably?* In order to answer the main research question, the following sub-questions are developed: 1) What are the most important aspects to take into account in terms of their environmental impact when organizing sustainable events?; 2) What are existing best practices with respect to the selected aspects and what is the environmental impact of implementing these?; 3) What are the current sustainable practices at WUR?; 4) What are opportunities to improve and what are benefits and constraints in improving sustainability at events at WUR?; 5) What are ways to motivate event organizers to improve sustainability at their events?

The first chapter focuses on the environmental aspects of events and what their impacts are. It gives an overview of the most important ones found in academic and grey literature. The chapter ends with a selection of the most important aspects that this research focuses on. In chapter two, the current best practices in terms of organizing events sustainably will be explored. Besides giving an overview of the best practices in terms of the chosen aspects, the environmental impact of implementing these practices is also analyzed. In chapter three, the current sustainable practices at WUR are discussed, both in general and in the specific event context. In chapter four, the possibilities to improve sustainable event practices at WUR are explored. Opportunities for, as well as benefits and constraints related to, organizing sustainable events at WUR is elaborated upon. In chapter five, the concept of motivation is explored. This chapter aims to discover how stakeholders can be motivated to implement sustainable event practices. In the conclusion, all findings are combined in order to establish a complete and useful checklist. Before delving in, an overview of the methods and methodology of this research is given.

Methods and methodology

Within this research, several data collection and data analysis methods were used. The different methods that were used are the following: literature review, stakeholder interviews, a content analysis. In this chapter, the selection for these methods is elaborated upon. The aim of this chapter is to give an overview of what methods were used during this research as well as an understanding of why these methods are appropriate for this research.

Table 1. Research questions and methods used

	Methods		
	Literature review	Stakeholder interviews	Content analysis
Q1 Important aspects	✓		
Q2 Best practices	✓		✓
Q3 Current situation at WUR	✓	✓	
Q4 Opportunities for events at WUR		✓	
Q5 Motivating stakeholders	✓	✓	

Literature review

As shown in table 1, a literature review was conducted to answer sub question 1, 2, 3 and 5. It was found that there is a lack of evidence-based knowledge on organizing events in a sustainable way. In order to fill this knowledge gap, a literature review was necessary. The benefit of a literature review is that it allows the researchers to gain an objective understanding of the different perspectives, topics and issues that are at play within the field of sustainable event management.

Different sources and types of documents were reviewed during the literature study, ranging from scientific journal articles to books and websites. Initially, the aim of the study was to mostly focus on academic literature. For academic literature, both Google Scholar and the WUR Library search tool were used to find appropriate and useful scientific books and articles. In addition, and partly because academic literature on the topic of sustainable events was limited, grey literature was consulted for additional information. Examples of grey literature include policy documents of WUR, handbooks, guidelines and organizational and institutional websites. Throughout the literature review, the book on sustainable event management written by Jones (2014) was used as both a primary reference work as well as a general source of inspiration during the literature study.

Firstly, a literature review was used to select the most important aspects in organizing sustainable events. Both grey and academic literature have been used to collect a comprehensive overview of what aspects are important in sustainable event management, according to scholars and other experts. Secondly, a literature review was conducted to find existing best practices with respect to the five chosen aspects. Prime examples of ‘green’ and sustainable events were found, that have the potential to serve as examples to inspire other event organizers. Thirdly, a literature review was also used to identify current sustainable practices at WUR. For this purpose, documents and policies that elaborate upon the current sustainable practices implemented at WUR were reviewed. Since there is no specific

policy on event sustainability at WUR, this review has only provided an overview of current general sustainable practices at WUR.

Lastly, a literature review was used to find in what ways stakeholders can be motivated to organize events more sustainable. This literature study focused on what theories and motivational methods exist. The results that were found can be used to motivate event organizers to use the checklist.

Stakeholder interviews

As depicted in table 1, stakeholder interviews were conducted to answer sub-question 3, 4 and 5. This second method, carrying out semi-structured interviews, is highly important in order to translate the academic findings into practical results that the specific stakeholders at WUR can use. By carrying out semi-structured interviews, detailed information could be collected in a conversational style (Harrell & Bradley, 2009). Interviewees were offered the chance to bring forward any issue they would like to discuss while ensuring that the interview questions were answered (Longhurst, 2016). Furthermore, the interviews with stakeholders also steered the direction in which the literature review was going; the stakeholders brought issues forward that could then be academically researched. The interviews aimed to identify constraints and benefits related to sustainable event management and to find out what needs to be done to motivate event organizers to organize their events more sustainable.

Semi-structured interviews were held among two different groups of stakeholders; the event organizers and facility staff at WUR. For the interviews with event organizers, an interview guideline was prepared in advance and used for every interviewee (see appendix 1). Event organizers were interviewed to identify their current sustainable practices and to determine what could help them organize their events even more sustainable. For the interviews with the facility staff, a different interview guideline was prepared in advance for each interviewee (see appendix 2). Facility staff was interviewed in order to receive background information on their roles in the organization of events at the WUR. Another aim of the interviews with facility staff was to identify potential barriers that prevent the event organizers from organizing in a more sustainable way. All interviews were conducted in November 2018. Results on how the checklist should look like according to the interviewees can be found in appendix 6.

To ensure that this research reflected the large variety of events that are organized at WUR, one event organizer from each of the following categories was invited for an interview: (1) Open Days and walk along days, (2) symposia and conferences, (3) presentations and lectures, (4) courses and (5) WURtalks (WUR, 2018). Therefore, a total of five event organizers were interviewed. In total, six facility staff members were interviewed. The facility staff interviewees were invited on basis of a technique called snowball sampling, which means that you get in contact with one participant via another participant (Biernacki & Waldorf, 1981). For this study, it was a useful method due to the limited time and the unknown field of event organization at WUR.

During the interviews, notes for the transcription were taken and all interviews were recorded. Afterwards, the transcripts were finalized using the recordings. For analyzing the transcripts, qualitative codes were developed. The codes were established on basis of the transcripts, the chapters and research questions. The following codes have been generated: waste; transportation; catering; communication and materials; energy; accommodation; benefits, constraints; opportunities; how to motivate stakeholders; how motivated are stakeholders; future plans; and general information. For each code, a separate color was used. This coding guideline can be found in appendix 3.

Three researchers separately coded the first interview and then compared the results to ensure that all researchers coded in the same way. This led to additional codes; a code for other sustainable practices and a code for specific information on the checklist. The coding of interviews was conducted by two

researchers, to be sure all researchers coded the same way. After the coding of the transcripts, a table was made to provide an overview of all codes. On the x-axis were the interviewees and on the y-axis were the different codes. This provided a clear overview of all results on one code, while also providing an overview of the results per interviewee. For reasons of confidentiality, the transcripts of the interviews and the overview table cannot be shared in this report. An overview of all codes for each aspect, so without the name of the interviewees, can be found in appendix 4.

Content analysis

As shown in table 1, a content analysis of existing documents was conducted in order to identify existing best practices related to sustainable event organization and to subsequently answer sub-question 2. A content analysis can be defined as a qualitative research method that systematically identifies patterns in different forms of documentation and communication and allows for interpretation of these patterns (Bryman & Bell, 2015). This specific research method was chosen because it enabled the researchers to look for similarities and differences in 'best practice' communications in a systematic and flexible manner.

In total, 21 documents were used as input for the content analysis. In order to generate results that represent the diverse spectrum of events and event organizers, existing checklists and guidelines for sustainable or 'green' event management from both universities (twelve in total) as well as other organizations and institutions (nine in total) were analyzed. Checklists from different parts of the world (Australia, United States, Hong Kong, Canada, United Kingdom, Belgium, the Netherlands and Denmark) were reviewed to account for national and cultural differences. Within the analysis, pieces of content were categorized using the following five aspects of sustainable event management: transportation, catering, communication and event material, waste and energy.

The first step of the content analysis consisted of compiling all of the raw data into a Microsoft Excel spreadsheet. For each of the five aspects, a separate sheet tab was created. Within the spreadsheet, each column represented one of the 21 documents. All pieces of raw data originating from the same document were copied and pasted in the same column. Within this method, a 'raw piece of data' is used to refer to a single best practice mentioned in one of the documents. For example, "ensure event vendors comply with zero waste standards" is a raw piece of data from the *Sustainable Event Checklist* that has been developed by North Carolina State University. In the initial spreadsheet, this piece of data was categorized under 'waste'. In total, 636 pieces of raw data were entered in the spreadsheet: 132 for waste, 152 for catering, 98 for transportation, 191 for materials and 63 for energy. It is important to note that the categorization that was used in each of the documents was held on to when compiling the data. As a result, the topics that fell under a certain aspect differed per source.

The second step of the content analysis focused on identifying differences and similarities in the data. In order to do this, a new Microsoft Excel spreadsheet was created with five different sheet tabs: one for each aspect. The researchers reviewed all the individual pieces of data belonging to a certain document per aspect. All 'unique' best practices, which can be understood as the pieces of content that had not yet been mentioned by any of the other already reviewed checklists, were added in the rows. If a piece of data had already been mentioned in one of the documents and it appeared again in another checklist or guideline, a '1' was added in the column belonging to the document in which the content was present. This procedure was repeated until all parts of the data were either included as a 'unique' best practice or counted as a duplicate. Furthermore, for each 'unique' piece of content the total number of times it appeared in all the 21 documents was calculated. These numbers were used as input for determining the top 5 of most common best practices. It was argued that, because these best practices seem to be top of mind, they provided a relatively easy starting point for improving the sustainability of events. Therefore, the most common best practices formed the basis for assessing the environmental

impact of certain improvements, which is discussed in chapter 2. In addition, within this step of the analysis, redundant parts of the data that were very context-specific or otherwise not applicable to WUR were removed. In total, the following amounts of unique pieces of content were found for each of the five aspects: 25 for waste, 33 for catering, 49 for transportation, 110 for communication and event materials and 39 for energy.

The final step of the content analysis consisted of identifying overarching themes and categories within the best practices for each of the five aspects. This was done to make the presentation and interpretation of the findings easier as well as more structured. All the best practices were subjected to a critical review and assigned to the category that was deemed most appropriate. Inductive reasoning was used, which means that the data formed the foundation for the development of the categories. Due to the size of the Microsoft Excel sheet presenting the results, it could not be added as an appendix. The results of the content analysis are available upon request.

In addition to the comparison of the checklists based on content, the same checklists were also analyzed and compared in terms of their overall structure, layout and design. This explorative study intended to uncover the various aspects that could be considered when designing a checklist. A similar approach to the one that was used for the content analysis was taken. A Microsoft Excel spreadsheet was created in which all design-related aspects were noted for all the individual checklists. Based on the input, underlying common aspects were identified. Examples of such aspects on which the checklists either differed or were similar, include the number of pages, use of colors and type of categorization (for example: per topic or per event phase). One checklist was excluded from the review as it was not suitable for this type of analysis due to its format. As this comparison was not an integral part of the report, an overview of the main findings can be found in appendix 5.

To conclude, it is important to note that, both within the academic and grey literature, significant overlap exists between the different aspects of sustainable event management. For example, one could argue that the use of disposable dishes and cutlery should be categorized under 'catering'. However, equally strong arguments could be given for categorizing disposables under 'communications and event materials' or 'waste'. As the context in which a topic is discussed influences the categorization, discrepancies might occur between the different data collection methods and the associated chapters.

Chapter 1 - The most important aspects to take into account in terms of their environmental impact when organizing a sustainable event

In this chapter, it is explored what aspects need to be considered when organizing a sustainable event. The chapter aims to give an overview of these aspects and their environmental significance. At the end of this chapter, a selection of the most important aspects is made. This selection represents the focus of this research project.

Aspects in terms of environmental impact

There are many aspects that affect the sustainability of events, in terms of environmental impact. These aspects could be considered before, during or after the event (Léopold, n.d.). A thought-out plan can highly reduce the ecological footprint of any event, whereas during the event the implementation of the agreed strategies must be carried out by the responsible actors (Léopold, n.d.). Following up, the results of the practices must be communicated to relevant stakeholders to show the feasibility of sustainable events (Léopold, n.d.). For this research, the project team aims to focus on what can be done before an event, as one of the goals of this research is to provide a checklist that can be used by event organizers during the preparation phase of an event.

In a review and comparison of both the academic literature as well as existing checklists and guidelines on sustainable events, the following recurring topics can be identified: location and venue, accommodation, transportation, catering, communication and event material, waste, and energy. These aspects are discussed in more detail below.

Location and venue

As was already mentioned, according to the ISO 20121 standard, an event can be defined as a “planned gathering with respect to a time and place”. Within this definition, the concept of *place* encompasses both the geographical location of the event as well as the selected event venue (ISO, 2012). The location and venue of an event should be well considered in the earlier stages of the event planning process, especially because the local sustainability strategy and efforts directly impact an event organizer’s ability to create a sustainable event (Jones, 2014). Important aspects to consider are the location’s resource management policies and environmental stewardship efforts. Relevant topics include energy sourcing, natural resource use, environmental protection as well as waste and water management (Jones, 2014).

Furthermore, the geographical location of the event venue is considered relevant as event attendees as well as suppliers, speakers and other involved parties will have to travel to the site which highly affects the CO₂ emissions resulting from the type of transportation they choose (UNEP, 2012). This transportation can be by foot, bike, car, public transport, plane or a combination of those. In a benchmark study conducted among seven Dutch outdoor festivals, event attendee transportation accounted for 24 percent of the total environmental impact. Similarly, the transportation of goods accounted for 15 percent (Green Events, 2013), thus making it an aspect with a large potential environmental impact.

In addition, the selection of an event venue can have a significant environmental impact. A large variety of event venues exist, ranging from full-service large-scale hotels and conference centers to public parks and ‘dry-hire’ historical buildings in which only basic amenities such as furniture, power and toilets are present (Jones, 2014). Event venues can vary greatly in terms of their long-term sustainability goals

and policies and day-to-day sustainability practices such as waste management and energy use (Resource Efficient Scotland, 2015). Important elements to consider include the proximity of public transport and whether the venue is sustainably built and operated. Examples are energy efficiency, adaptivity to local climate, well-developed water and waste management practices and considering indoor environment quality issues (Jones, 2014).

Accommodation

For events with a duration of multiple days, or when event attendees need to travel a large distance to be able to attend the event, the accommodation of the attendees should be considered (Fédération Équestre Internationale (FEI), 2014). Within this specific context, accommodation refers to buildings or rooms where people stay on a temporary basis. Different types of accommodation can be distinguished, ranging from hotels and campsites to holiday homes and rented Airbnb apartments. Within the hospitality and lodging industry, sustainability takes a prominent place both in academic literature and among industry practitioners and large corporate hotel chains (Bruns-Smith, Choy, Chong & Verma, 2015; Mair & Jago, 2010).

Regardless of this increased attention for sustainability issues, accommodations, similar to event venues, can vary greatly in terms of their sustainability policies and everyday practices. The aspects that have been outlined in the section of 'location and venue' all play an important role when selecting an accommodation provider. In addition, most of the aspects discussed in this chapter (catering, waste, transportation and energy use) contribute to the degree of sustainability within an accommodation.

Transportation

As already mentioned, transportation is one of the major factors affecting the ecological footprint of an event (Stichting Stimular, 2013). Jones (2014) states that "transportation is the largest greenhouse gas (GHG) contributor for most events" (p.134). Transportation includes the travelling of attendees as well as organizers and other participants to the event location. Furthermore, as UNEP's Guide on Sustainable Events (2012) explains, "participants are likely to undertake a number of trips within the region or the city" (p. 40) during an event. Besides people, the equipment and materials must be transported to the event site (Jones, 2014). Lastly, the waste produced during the event must be transported away (Jones, 2014).

These trips have an impact on carbon dioxide (CO₂) emissions and air pollution, the size of which depends on the length of the trips as well as the type of transportation that is used (UNEP, 2012). Carbon dioxide is one of the most important greenhouse gases contributing to climate change (Swedish Environmental Protection Agency (SEPA), 2012). Other harmful emissions resulting from the burning of fossil fuels by transportation vehicles, include nitrogen oxides (NO_x), volatile organic compounds (VOCs), particulate matter (PM) and sulfur dioxide (SO₂) (Chester, 2008). These emissions can cause ground-level ozone formation as well as acid deposition (Chester, 2008). The contribution of emissions varies and differs greatly between different modes of transportation like autos, buses, rails and air systems per passenger mile travelled (Chester, 2008).

SEPA (2012) states that apart from the impact transportation has on the climate, other impacts like "noise, human health, acidification, land use and damage to the ozone layer" should be taken into account. Moreover, according to Chester and Horvath (2008) environmental impacts are caused in all of the following phases regarding transportation: "design, raw materials extraction, manufacturing, construction, operation, maintenance, and end-of-life of the infrastructure and vehicles" (p.11).

Catering

Another important aspect in sustainable event management is catering. Catering is an important aspect in terms of sustainability, as it "offers a venue to introduce consumers to more sustainable food alternatives, such as organic, seasonal, local, or vegetarian meals" (Wahlen, Heiskanen, & Aalto, 2011,

p. 8). Besides the types of food offered, the aspect of catering also includes the use and disposal of food-related items (Jones, 2014). This will be elaborated further in the aspects of 'communication and event materials' and 'waste'.

For example, there is a difference between meat and vegetarian meals in terms of greenhouse gas emissions. As explained by Carrington (2018), "beef results in up to 105 kg of greenhouse gases per 100g of meat, while tofu produces less than 3.5 kg". This difference can be explained by the different needs that animal production has (De Boer et al., 2011). For example, turning land into arable land and the use of machinery increases carbon dioxide (CO₂) emissions. Besides CO₂, methane is emitted for example during the storage of manure. Nitrous oxide is also emitted during animal production (De Boer et al., 2011).

A second example concerns the difference regarding environmental impact between seasonal food and 'out-of-season' food. Food that is out of season, will need to be stored coldly for a longer period of time, using a lot of electricity (Jones, 2014, p. 210). In addition, food that is not in season will need to be imported from other locations, thereby influencing transportation emissions as described before. All in all, the environmental impact of catering varies and depends on what food choices are offered, where the food comes from and how the food is produced (United Nations Environmental Program, 2009; Laing & Frost, 2010; UNEP, 2012).

The impact of this choice can be considerable when one takes into account all the steps involved (Resource Efficient Scotland, 2015; UNEP, 2012); "from the procurement of food to the handling of the wastes produced by catering services and the traffic generated by their transportation" (UNEP, 2012, p. 32). The different steps involved in this process affect the emissions that are generated, the waste that is produced and the resources that are consumed (UNEP, 2012).

Communication and event material

Communication and event material is another aspect that can have a negative impact on the environment. This aspect includes all communication activities that are part of an event. One could think of the materials needed for the registration process, promotion materials, handouts, decoration and banners (UNEP, 2012).

In general, many materials that are used at events are made of timber. For example, timber is used for construction, design, staging, outdoor furniture as well as for paper and cardboard, packaging and displays (Jones, 2014). In order to acquire timber, trees must be logged. Logging is a process in which trees are cut and processed in order to produce timber and pulp for all kinds of purposes (Yale School of Forestry & Environmental Studies, n.d.). When timber is logged and moved away from the forest, it is difficult to find out whether it has been produced sustainably and whether it has been logged legally (Jones, 2014). If logging activities are not managed, it can contribute to deforestation and forest degradation (Yale School of Forestry & Environmental Studies, n.d.).

Related to paper, an additional environmental issue concerns the manner in which the paper was bleached (Jones, 2014). The bleaching can be done with or without chlorine. Using chlorine results in the release of 'chlorinated organic compounds' which can present a risk to the environment as well as to the food chain (Solomon, 1996). In general, for every brand of paper, "the location of the plantation, mill, recycling processing facilities, distribution center, end user and waste channels all need to be considered" (Jones, 2014, p. 190). For example, pulp and paper mills are an enormous source of pollution (Engelhaupt, 2008). They pollute the air with "CO₂, nitrogen oxides (NO_x), sulfur oxides (SO_x), carbon monoxide, and particulates, which contribute to global warming, smog, acid rain, and respiratory problems" (Engelhaupt, p. 4243).

The choice of ink also affects impacts on the environment. If traditional ink is used for printing, negative environmental impacts can be caused through emissions and toxic residue (Jones, 2014). Ink emits volatile organic compounds (VOCs) due to it being petroleum-based. Petroleum is a non-renewable source and emits VOCs in the drying process. Furthermore, in order to clean-up ink, solvents are needed that also cause the emission of VOCs (Jones, 2014). As Kotler (2011) explains, “companies need to consider how much to shift their promotion from print to online, based on the notion that print uses up paper, ink, and other resources” (p. 133). This notion does not only apply to companies, as event organizers perform promotion activities as well, nor does it apply to promotion activities alone. Paper and other resources are also used for other purposes, like a registration process. However, it is important to keep in mind that an electronic alternative to paper does not always guarantee a lower environmental impact (Omega Center for Sustainable Living, 2014). For example, when comparing the environmental impacts of reading printed materials versus reading texts on e-readers, it can be concluded that “the emissions created by a single e-reader are equal to roughly 100 books” (Omega Center for Sustainable Living, 2014).

Giveaways or goodie bags are also common ‘materials’ used at an event. As Jones (2014) explains, “people are used to attending events and coming away with a hoard of freebies” (p. 196). The things that they receive are often single-use promotional items that are not made environmentally friendly. Such products are destined for landfill according to Jones (2014).

In addition, the production and disposal of several other event materials have the potential to negatively impact the environment. Examples of such materials include signage (which refers to all signs that are present at an event, for example to provide directions), decorations and name badges. Furthermore, the catering of an event makes use of an enormous amount of materials, through packaging and cleaning as well as the common use of disposable tableware (Jones, 2014).

Waste

Waste is another aspect which contributes to the ecological footprint of an event. During an event waste is produced by eating, drinking, construction, decoration and staging (Jones, 2014). It includes waste from organic material, plastic, paper and cardboard, glass, metal and timber as well as hazardous waste like chemicals (Jones, 2014). Furthermore, Jones (2014) states that about “71 tons of waste are produced during the original product’s journey from raw material to manufacturing, distribution and sale ... for every ton of end-of-life-cycle waste” (p. 238). Ecological impacts resulting from waste occur in different stages: collection and transport, recycling, composting and landfill.

The collection and transport of all sorts of waste releases emissions such as CO₂ into the atmosphere which also contributes to climate change (European Environmental Agency, 2014). Recycling is the process of recovering a part of the natural resources in order to reuse them (“Recycling Waste”, n.d.). The recycling rates have continuously increase over the past 30 year. However, there is still a large amount of recyclable waste, about 60 percent, going to landfill (U.S. Environmental Protection Agency, 2013).

An example of a waste product is plastic. Plastics are most of the times only used once (D’Alessandro, 2014). There are several types of recyclable plastic like PET, HDPE, LDPE, LLDPE and PP (Jones, 2014). The ones that are not recycled will go to incineration which will produce excessive greenhouse gas emissions (Milios, Davani, & Yu, 2018) or go to landfill or end up in oceans where it will take about 450 years for a piece of plastic to decompose (Jones, 2014).

Waste management is an important factor to take into account as disposal directly to landfill can lead to environmental degradation due to pollutants can leak into the soil and water bodies (Resource Efficient Scotland, 2015). Furthermore, landfills release methane which is one of the strongest greenhouse gases (European Environmental Agency, 2014). Moreover, valuable resources and scarce

materials can be lost, and greenhouse gases can be produced by the waste, which contributes to climate change (Resource Efficient Scotland, 2015).

Energy

The energy usage of events is also important to consider as the production of energy has a huge ecological impact. Energy is used for heating and cooling, lighting, audio and all other aspects that include the use of electricity for the event (Resource Efficient Scotland, 2015). It is often one of the most poorly planned aspects (Resource Efficient Scotland, 2015). In the Netherlands about 93 percent of the electric energy is produced by the combustion of fossil fuels like natural gas (40 percent), oil (39 percent) and coal (14 percent) (Energie Beheer Nederland, 2016).

Environmental impacts result from the extraction, transportation, combustion as well as the waste products of fossil fuels (Union of Concerned Scientists, 2016). Coal- and oil-fired power plants are one of the major sources of atmospheric CO₂ where a typical 600-Megawatt (MW) coal plant produces about 3.5 million tons CO₂ per year (Henderson, 2018). Furthermore, fossil fuel power plants are the largest source of sulfur dioxide (SO₂) to the atmosphere, where for example a 600 MW coal plant produces between 7000 to 14,100 tons SO₂ per year depending on the implemented emission controls and the sulphur content of the coal (Henderson, 2018). This is a problem, as high SO₂ concentrations in the air result in the formation of other sulphur oxides (SO_x) which then react with other compounds to form small particles (Henderson, 2018). These can form toxic compounds which harm the fauna and flora which come into contact with it (Henderson, 2018). Another pollutant produced during fossil fuel combustion are nitrogen oxides (NO_x). These stimulate reactions which lead to ground-level ozone or smog (Henderson, 2018). Moreover, the emission of atmospheric nitrogen can cause ecological harm through the 'eutrophication' of lakes and coastal river zones, which greatly alters the water quality and restrains and alters the occurrence of plants and marine animals (Energie Beheer Nederland, 2016). A typical 600 MW power plant emits about 3300 to 10,300 tons NO_x per year (Henderson, 2018).

Besides air pollution, fossil fuel plants affect the environment in other ways. For example, for the cooling of a steam engine large amounts of surface water are taken up by the power plant and discharged again with excess heat. Moreover, chemicals such as chlorine are used to clean the water and prevent mussel fouling. Another problem is the release of heavy metals as well as resulting emissions from additives like sawdust. All these factors change the stream and ecology of the surface water which influences the aquatic life. Above that the uptake of water may even absorb fish and other aquatic animals which can damage or even kill them depending on their sensitivity to hard surfaces and screens (Henderson, 2018). Furthermore, emissions like CO₂, SO₂ and NO₂ support the formation of acid rain which damages plants and soils. Moreover, it influences the pH of water bodies, which changes the environment and habitat of plants and animals (Wondyfraw, 2014).

Renewable energy is seen as a clean source of energy because it produces relatively low levels of GHG emissions. However, they are not completely resistant towards ecological impacts as in phases like manufacturing and transportation some emissions are generated (U. S. National Academy of Engineering and National Research Council (NAENRC), 2010). Furthermore, some technologies consume large quantities of water and the installations cause changes in land usage and disturb wildlife habitat (NAENRC, 2010). Moreover, for the production of some renewable energy technologies toxic substances are needed which can contaminate water bodies (NAENRC, 2010).

Selection of most important aspects

In order to further structure and specify this report, an emphasis will be placed on the following four aspects: transportation, catering, communication and event materials, and waste. These aspects have

been selected because it is believed that changes aimed at improving overall event sustainability within these four specific domains are most straightforward and feasible to implement.

This reasoning is in line with the parameters of sustainable initiatives as set out in the FEI Sustainability Handbook, which suggests that proposed improvements within all sustainability domains can be categorized on the basis of the following three criteria: 1) impact minimization, 2) awareness potential and 3) ease of implementation (FEI, 2014). Sustainable initiatives can be graded on each of the three criteria with scores ranging from low to very high. The selection of the four aspects is thus based on the combination of all three elements: possible sustainability improvements within these specific areas are expected to significantly minimize the environmental impact whilst also having the potential to raise awareness about the importance of sustainability. In addition, the ease of implementing new sustainable initiatives can be considered as high, especially in comparison to other sustainability domains such as energy use and venue design.

Parallels can be drawn between the criteria proposed by the FEI and findings in academic literature. One of the main external drivers of sustainable practices in the business events sector is image enhancement, which refers to sustainability investments and improvements being done in order to “be seen as green” (Mair & Jago, 2010). By linking this concept to the awareness potential criteria, it can be argued that the visibility of sustainability practices is important, not only to raise awareness for the importance of sustainability but also to enhance an organization’s image (De Vries, Terwel, Ellemers & Daamen, 2015), gain an attractive position within the market and develop a sustainability-based competitive advantage (Jones, 2014). Each of the four chosen elements have been selected because they have the potential to make the impact and outcome of sustainability improvements visible for both event organizers and event attendees at WUR.

The aspects that are emphasized less within this research project are the event location and venue, accommodation and energy. Location and venue are aspects that are excluded from our research, as it was already decided to only focus on events that are organized at the WUR campus. The choice of a location is therefore not applicable within this research. Besides the location, there are not a whole lot of venues that event organizers can choose from. Therefore, it was argued this was not a relevant aspect to consider within the WUR context. Besides location and venue, the accommodation aspect is also not a focus point of this study. The majority of the events reviewed in this project, do not take longer than one day. Besides, when events do, there is only so much an event organizer can do. There are not many hotels in the area of WUR and thus the choice is limited. Of course, event organizers can still be advised to look at the hotels that are offered so that they can advise their attendees on the ones that would be most sustainable. However, it is believed that event organizers can make a bigger impact in terms of sustainability when focusing on different aspects. The last aspect that is discussed to a lesser extent, is energy. Energy use is an extremely important aspect in terms of sustainability, but also one that is difficult to change. Since all events take place at WUR, the energy is sourced and regulated from the same place. Mostly, the energy regulation is out of the event organizers’ hands. Therefore, energy will not be one of our main focus points. At the same time, the project team does not want to ignore it and will advise event organizers on how to use less energy for example.

Chapter 2 - Existing best practices with respect to the selected aspects and the environmental impact of implementing these

This chapter will start out by giving an overview of the existing best practices regarding the organization of more sustainable events. Checklists that already exist will be compared in terms of content, to see what practices other universities and organizations perform in terms of sustainability. Besides checklists, there will be looked at good examples of sustainable events from all over the world. Results from the content analysis will be presented first, where after the examples that were found in literature are set out. After these results are presented, the best practices are explored in terms of their positive environmental impact. In other words, the environmental impact resulting from the implementation of sustainable practices is discussed.

Results content analysis

In order to find out what the best practices in terms of sustainable event management are, a content analysis was done. For each of the aspects that this research focuses on, the best practices were explored. In total, 21 checklists were compared to identify differences and similarities. In order to generate results that represent the diverse spectrum of events and event organizers, existing checklists from both universities (twelve in total) as well as other organizations and institutions (nine in total) were analyzed. Checklists from different parts of the world were reviewed to account for national and cultural differences. Due to the substantial amount of overlap between the different checklists, the findings of the analysis are combined in order to create a comprehensive and useful overview. In this section, the main results of the content analysis are summarized for each of the different aspects. Importantly, only the results are presented within this section. An elaboration of why these results are considered to be environmental best practices is given at the end of this chapter in 'sustainable practices and their environmental impact'.

In the analysis of the checklists, three general best practices were found that can be applied to all the different aspects of sustainable event management. Firstly, event organizers are recommended to work with third parties, such as suppliers, transportation providers, caterers, and waste handlers, that comply with the event's sustainability strategy, as doing so will ensure that an effective alignment of principles is in place. Secondly, organizers are encouraged to recognize the potential that events have to create awareness about the importance of green and sustainable event management. A practical way to achieve this is to provide attendees, speakers and other third parties with information about the sustainable practices at an event in all communications, both prior, during and post-event. Another best practice that closely relates to this suggests that attendees should be informed about the environmental initiatives that have been implemented by event organizers so that they can learn from it.

Transportation

With regards to transportation, 49 unique best practices were found. As for the other aspects, there were some best practices that stood out and were mentioned more than others. These were the following:

1. Encourage or ask participants to purchase carbon offsets (counted 8 times)
2. Provide clear maps with directions showing public transport options (counted 7 times)
3. Encourage attendees to walk to your event (counted 6 times)
4. Encourage attendees to cycle to your event (counted 6 times)
5. Include transportation options in event-related marketing efforts on your website and in emails (counted 6 times)

6. Provide maps and directions for accessing the campus via cycling and walking routes (counted 6 times)

More best practices were found during the content analysis. The practices found can be divided into the following categories: the use of sustainable means of transportation, the use of unsustainable means of transportation, reduction of transportation and other. All results that were found in terms of transportation will now be summarized.

In general, most of the best practices are focused on encouraging the use of sustainable means of transportation (both to and on-site) by attendees and staff, as well as for suppliers and speakers. Many of the recommendations found focus on the promotion of walking, cycling, making use of public transport and carpooling as alternatives to driving a (not fully occupied) car. Many of the recommendations aim to motivate people to choose for sustainable transportation means. For example, a best practice is to provide maps or directions for public transport and for cycling and walking. In this way, the sustainable transportation methods are made easy for the attendees. Ensuring that there are, for example, enough bike-related facilities would therefore also be a good practice. Another best practice would be to offer shuttle buses to and from the public transportation points during the event. Besides this, event organizers could consider including information about transportation in their marketing efforts. For example, event organizers could already mention sustainable transportation possibilities in the invitation to the event. Similarly, event organizers could encourage carpooling already in the invitation.

Besides these measures, best practices also focused on incentives. Many checklists found it important to offer incentives to attendees to choose for sustainable means of transportation. Incentives include a discounted registration fee, a draw for a sustainable prize, a public transport competition, discounts, bikes for free or for rent, including a public transportation pass in ticket price, etcetera.

When people cannot travel by any sustainable means of transportation and must go by car or plane, other best practices are applicable. In general, when there are attendees that travel by car, a best practice would be to avoid scheduling the beginning and end of the event during peak travel times, in order to reduce negative environmental impacts from emissions. With regards to traveling by plane, best practices would include to book a CO2 neutral seat, to book a direct flight, to look at the age of the plane and to fly in economy class.

Besides best practices that focus on the use of sustainable means of transportation, there are also best practices focused on the reduction of transportation. For example, event organizers are recommended to really think about the artist or speaker selection they invite. More speakers and artists mean more transportation and thus also more impact on the environment. Another best practice related to reducing the amount of transportation needed, would be to use a joint storage space to centralize the transport of suppliers. Lastly, transportation can be reduced by meeting international attendees virtually instead of in person.

Finally, other types of best practices were put forward in the checklists. For example, a best practice would be for organizers to ask and encourage people to purchase carbon offsets. Another best practice would be to start a climate neutral initiative as compensation for the environmental impacts of the events. Lastly, a recommendation could be to assign a sustainable transport assistant during the event.

Catering

For the aspect of catering, 33 unique best practices were identified. These aspects can be assigned to the following categories: the type of food served; what to use; what to avoid when considering catering; and, other practices. The following best practices were mentioned the most:

1. Serve local food at the event (counted 18 times)
2. Serve vegetarian or vegan food options (counted 17 times)
3. Serve organic food at the event (counted 16 times)
4. Serve seasonal products (counted 13 times)
5. Provide water stations for people to fill up their bottles or glasses (counted 12 times)

An important category that was found within catering concerns what types of food are provided to the attendees. This includes fresh and healthy options, vegetarian and vegan meals, locally produced as well as locally purchased products. Moreover, event organizers are encouraged to offer food that is ethically produced, offer organic food as well as organic alcoholic drinks and to offer seasonal fruit and vegetables. It is recommended that meat and dairy products are either free range or eco-certified. If seafood is offered this could be sustainably sourced or have an ocean wise label.

The following best practices concern recommendations on what to use within catering. It is mentioned that water and other beverage stations could be provided so that attendees can refill their bottles or cups in order to decrease the amount of bottles and other packages used. To further reduce the amount of packaging, condiments as well as other products can be bought and provided in bulk.

In addition to this, some products and activities should be avoided. For example, it is recommended to avoid the use of animal products and the use of large quantities of ice. Furthermore, the pre-filling of glasses is not recommended. Interestingly, the view on the use of buffets differs within the several checklists. In one checklist it is mentioned to promote the use of a buffet when serving food in order to avoid unnecessary packaging. However, in some other checklists they mentioned to avoid serving buffet style in order to reduce the amount of food wasted since this way it is more difficult to anticipate the amount of food needed. This also relates to the best practice to cook food live or on demand so that only the food asked for by the participants is prepared. Another idea is to ask attendees in the RSVP, or the registration process, to state what kind of meal they wish to eat during the event and order this with the caterer accordingly. Moreover, event organizers can experiment with the amount of food ordered from the caterer since usually there is a lot of leftover food after each event.

Other practices include to engage and encourage the caterers themselves to provide healthy and sustainable food options. It can also be discussed to set a percentage of products that must be local, vegetarian or vegan, or to even only offer vegetarian food during the event. Furthermore, the staff as well as the attendees could be informed about the environmental initiatives and the green aspects of the menu to raise awareness of the sustainability of the event. Additionally, some checklists mentioned that the catering premises should be cleaned in an environmentally friendly way.

Communication and event materials

Regarding communication and event materials, a total of 110 unique best practices were found. The best practices that were found most often are the following:

1. Aim for a paperless event and distribute all materials electronically (counted 12 times)
2. Buy and print on recycled and certified paper (counted 10 times)
3. Use electronic registration systems, digital check-in systems and email for all event-related communications (counted 10 times)
4. Reduce the amount of giveaways and goodie bags. If gifts are required, ensure that only useful, reusable and sustainable giveaways are provided (counted 9 times)
5. Avoid the use of disposables (counted 9 times)

In presenting the findings of the analysis, a distinction is made between the communication and the event materials part of this aspect. Within the communication part, the best practices found can be

assigned to one of two categories: practices aimed at organizing a paperless event and practices related to printing if it is deemed necessary by the event organizer.

One of the most common best practices related to event communication is to aim for a mostly or entirely paperless event. In this section, practices that are needed in order to make a paperless event a possibility, are outlined. Firstly, all event-related materials such as general information, programs, handouts and presentation slides could be distributed electronically via a mobile app, e-mail, a dedicated event website or social media. An electronic RSVP (event registration) system should be in place and the on-site check in on the day of the event might happen digitally. For event-related advertising and promotions, digital and online channels are recommended. During the event, traditional signage made from paper or cardboard can be replaced by electronic signage, effectively limiting the use of materials. Where possible, event organizers or speakers are recommended to use verbal communication instead of printed materials to get their message across. Post-event best practices include the use of online surveys to gather participant feedback and the use of an online accounting and invoicing system. An essential best practice that is needed to facilitate the organization of a paperless event is to ensure that a stable, secure and high-speed internet connection is available for all involved parties.

If printing is necessary or unavoidable, the following common best practices could be considered: print double-sided on locally, recycled, recyclable, certified and chlorine-free paper using a recyclable toner and vegetable and/or soy-based ink. Where possible, the font and print size of materials can be reduced to minimize the amount of paper or cardboard needed. In several of the checklists, event organizers are advised to avoid the use of glossy and colorful paper as this is less easy to recycle or reuse. In addition, event organizers are recommended to avoid the printing of dates or one-time slogans as this renders the printed materials useless for future events. If printing is outsourced to a third party, organizers are encouraged to only use green companies that have adopted responsible printing techniques and materials. A final printing-related best practice is to collect, recycle or donate all left-over printed materials to charities or other institutions.

In presenting the findings of the event materials part, firstly more general best practices are discussed, followed by specific findings for each of the following categories: gifts, badges, signage, decoration and catering.

A recurring best practice in event materials is the return, reuse or donation of both used and unused items. Event organizers are encouraged to consider the end of life of products prior to purchase and to think in advance of potential donation streams for leftover materials. In order to facilitate these practices, dedicated areas for the collection of used event materials should be both available and highly visible during the event. In addition, opportunities for buying, borrowing or loaning second-hand goods, as opposed to new materials, could be explored. It is recommended to purchase locally produced, eco-friendly and fair-trade event materials that are minimally packaged or to use recycled content packaging. It is recommended to avoid event materials with aluminum, plastic and PVC packaging. In pre-event communications, event attendees could be encouraged to bring their own materials such as pens or notebooks as this limits the purchase of unnecessary products and the production of waste. Paper flip charts can be replaced by digital boards or whiteboards. A concluding best practice for this aspect is to make sustainable purchasing choices when it comes to buying event materials. Sustainable procurement can be enhanced by using (local) suppliers that embrace and incorporate sustainability practices into their way of working.

A reappearing best practice related to gifts is to limit and if possible, avoid the use of gifts and goodie bags in general, mostly due to their impact on the different waste streams. Instead, goodie bags can be substituted with donations to social or environmental causes (i.e. planting a tree for each attendee). If this is done, attendees could be informed of the impact of such initiatives in order to create green

awareness. If gifts or goodie bags are used, preference is given to experience-based and locally-produced gifts that are useful, reusable and sustainable. Event organizers are recommended to offer gifts that convey a green message, for example by helping attendees to use more environmentally friendly and sustainable products or to make the transition to a zero-waste lifestyle. Many checklists recommend including reusable water bottles or coffee cups in gift bags. It is recommended to avoid gift bags made from single-use or non-woven polypropylene plastics as much as possible.

As discussed, electronic signage is preferred over printed signage. When the use of electronic signage is not an option, it is recommended to print signage on biodegradable paper or other materials. In addition, all printed signage should be recycled after the event within the appropriate waste category. A similar best practice was identified for name badges; these could be collected for reuse at future events.

Decorations and furniture determine the look and feel of an event and are an integral part of event materials. A general best practice within this sub-category is that all decorations and furniture should be reused as much as possible. For example, in existing checklists organizers are encouraged to use borrowed plants and soy candles as decorations and to give away decorations post-event. It is recommended to use existing furniture belonging to the event venue or to rent innovative furniture that is made from recycled waste materials. Exhibition stands could be made from environmentally friendly and recyclable materials. Event organizers are advised to avoid the use of disposable carpets, floorboards, balloons and confetti. Excessive decorations are to be avoided where possible.

A recurring finding within the subcategory of catering materials is the instruction to avoid individually packaged items such as straws, coffee stirrers, paper doilies, toothpicks as much as possible in order to limit the production of unnecessary waste. In addition, the food and condiments should not be wrapped or packaged individually but instead can be offered in bulk containers. Rather than offering single-serve bottled beverages such as water bottles, it is recommended to use water stations. If bottled water is needed, the bottles are recommended to be made from 100 percent PET. Event organizers are advised to avoid the use of disposable plates, cups, napkins, glasses and cutlery and instead use reusable tableware, containers and dark-colored linen (which requires less cleaning). If the use of disposables is required, they are to have a high content of recycled, plant-based, compostable or biodegradable materials. In pre-event communications, organizers are advised make use of the opportunity to encourage attendees to bring their own reusable coffee mug and water bottle. Lastly, event organizers are encouraged to ensure that environmentally friendly cleaning practices and products are used by catering staff.

Waste

Regarding the aspect of waste, 25 unique best practices were found during the content analysis. Many of these unique best practices were mentioned more than once. The best practices that were mentioned in the checklists most often are the following:

1. Place additional labels with clear images, 3D signs, or announcements of the types of items appropriate for recycling (counted 12 times)
2. Ensure that separate bins are available for waste separation (counted 10 times)
3. Order recycling and composting services (counted 7 times)
4. Donate or give out leftover food (counted 7 times)
5. Stationing volunteers or Green Teams near sorting bins to help participants sort their waste correctly (counted 6 times)
6. Collect organic waste where possible (counted 6 times)

Besides these best practices, other recommendations were found. The main categories that these best practices belong to are: waste separation, waste reduction and raising awareness. A summary of the results in general will now be given.

The most important best practice that was found relates to waste separation. Waste separation is seen as something that is essential at a sustainably organized event. Organizers should ensure that the recycling of waste products is possible and monitor the effectiveness of their recycling efforts. Within waste separation, several best practices exist. A very basic practice is placing bins for all different types of waste. Regarding these different types of waste, it is important not to forget organic waste and the importance of the possibility to compost this type of waste. Besides ensuring that there is a place for each type of waste, a good practice for event organizers would be to make sure that attendees know where the separation points are, for example through offering a floorplan that highlights the locations. It is important that the bins are placed visibly and in 'high traffic' areas. Furthermore, it is important that people know which waste products go in which bins. For this purpose, clear signage is an essential practice. Even when attendees are provided with all the above knowledge, a good practice would be for event organizers to offer incentives to the attendees to separate their waste. An idea to motivate attendees to separate their waste is to work with a 'Green Team' which encourages separation behavior and makes attendees enthusiastic about the green event.

Another important topic within the findings was that of waste reduction. The waste that is generated should indeed be separated, but waste should be as minimal as possible to begin with. An important practice in this regard is to anticipate before the event about what can be done with leftover materials like food, flowers, decorations and signage. Different best practices were found within the checklists. For example, event organizers could charge the exhibitors for the amount of waste that they produce during the event. Another idea could be to make arrangements with the suppliers for the return of leftover and unused products. This is highly applicable to the catering of an event, as the caterers could calculate numbers beforehand so that the appropriate amount of food is ordered.

A last best practice that was found relates to awareness and the visibility of the sustainable event. It is suggested that event organizers collect figures on the estimated amount of the recyclables collected and diverted from the landfill, the number of trees saved, the amount of water or energy saved, and so on. These figures can then be shared with the attendees, to demonstrate the success of the green event.

Energy

For the energy aspect, 38 unique best practices were identified. The following best practices were found most often:

1. Turn all electrical equipment off when it is not in use (counted 7 times)
2. Hold event during day to use natural light (counted 5 times)
3. Turn off unnecessary light (counted 5 times)
4. Turn off unnecessary heating and cooling (counted 4 times)
5. Ensure that 100 percent green electricity is provided for the event (counted 4 times)
6. Use energy efficient lighting (counted 4 times)

Besides this top six, more best practices were found. The findings can be categorized as follows: venue and time of event, heating and cooling, equipment, use of electricity and others. A summary of the findings will now be given.

For the category of venue and time the following practices were found in the compared checklists. It is advised to use an appropriately sized venue and amount of equipment for the number people participating in the event. Moreover, the event could be held during the day to use natural light rather

than artificial light in order to limit the energy consumption. Another approach is to host the event outdoors and to schedule the event for milder months.

The heating and cooling best practices advised to avoid overcooling and prioritize passive cooling with shading or natural ventilation if the event is conducted outside during warmer months. If the event is held indoors, it is recommended to heat or cool the room temperature within a range of 18 to 27.5 degrees Celsius or not to cool it more than 6 degrees Celsius lower than the outside temperature depending on the checklist. Other advices include not to turn on the air conditioning during the setup and packing period of the event as well as to turn the heating/cooling off when not needed.

The energy efficiency of different types of equipment vary greatly. The different checklists suggest using modern, fuel-saving environmentally friendly or bio-diesel generators when needed. Moreover, the use of the generator can be monitored, and town power can be used. In general, it is recommended to use energy efficient equipment and enable the energy saving mode. Additionally, the equipment could be hired from local suppliers and the use of excess equipment reduced to a minimum. If containers for food are used, favor the use of powerless insulated boxes rather than ones that need the use of electricity.

When installing lights, it is recommended to use energy efficient lighting such as LED lighting, low-energy strip lighting or low-energy light bulbs. Furthermore, the use of presence-controlled, time-controlled lighting can be installed and all light which is not necessarily needed should be turned off. Furthermore, it is recommended to use electricity only when needed. An energy savings plans as well as a detailed electricity plan can help to achieve this. Other measures are to turn off all electrical equipment and multi-power sockets when not in use, especially after the event. It can help to designate a staff member or volunteer to be responsible to switch off this equipment. Some checklists also recommend preferring the use of fixed electricity outlets. In general, it would be best to ensure the use of 100 percent green electricity at your event.

Other best practices include to hire someone to calculate the carbon footprint of your event or calculate it yourself in order to offset your event's carbon footprint. Moreover, it is recommended to create signs to remind, as well as educate, people about the energy saving methods used.

Worldwide best practices

Transport

The Calgary Folk Music Festival has moved away from petrol- and diesel-powered transportation vehicles (Jones, 2014). Instead, they only use electric vehicles. These vehicles are used by the festival crew to move recyclable waste around the festival site. Most of the time, pedal power is used. However, there is a back-up boost of electric power (Jones, 2014) which is used for the heavier loads of waste, hills and large bumps. The battery cells from the electric vehicles are charged with solar power.

Another good example in terms of transport can be seen at the Coachella Valley Music and Arts Festival. This festival lasts three days and is held in an urban area. This means that around 50.000 cars drive towards the event every day (Jones, 2014). In order to reduce the negative impacts of this, Coachella created 'Carpoolchella'. Carpoolchella is an initiative to promote carpooling. People that drive to the festival with four or more people in their car, can win prizes "by advertising their environmentally conscious decision with a sign on their car that says 'Carpoolchella'" (Jones, 2014, p. 146). The prizes that can be won include, amongst other things, VIP tickets for life, food vouchers or merchandise vouchers (Coachella, n.d.). Besides reducing the negative environmental impacts of the festival, Carpoolchella excites the festival attendees before they enter the actual festival (Jones, 2014).

Catering

In 2012, the Way Out West festival in Sweden decided to only offer vegetarian food (Jones, 2014). The ecological footprint of the festival was reduced with 23.9 percent, while the visitor number of the festival increased with 19 percent that year. Furthermore, the impact from catering on the total ecological footprint was reduced from 62 percent to 37 percent. Lastly, the environmental impact calculated per visitor was reduced with 40 percent (Jones, 2014, p. 210).

Another good example in terms of catering could be seen at the Sustainable Hospitality Symposium, which was held in 2010 at the California State University (Jones, 2014, p. 209). All the food that was offered there was tagged with information about where the food came from and how sustainable it was (Jones, 2014).

Communication and event materials

Examples of good practices in terms of materials can be seen at the Glastonbury Festival (Jones, 2014). This festival uses a lot of wooden materials. Besides making sure that the wood that is used is sourced sustainably, the organizers reuse all wooden structures (Glastonbury Festival, n.d.). For example, the festival reuses their hand-painted, timber sign each year. All other wood that is used at the festival is dismantled and used on and around the event location. Another example of a good practice in terms of materials can be seen in the organization's rules on plates and cutlery. The organization does only allow plates and cutlery that can be reused or composted (Glastonbury Festival, n.d.).

Waste

An international exhibition and conference center in London, ExCel, has installed a wormery. The wormery contains 300.000 worms which are "capable of eating at least two times their body weight a day" (Jones, p. 274). As Jones (2014) explains, "all types of food waste can naturally be recycled into productive, nutrient-rich soil" (p. 274). The food waste coming from the kitchens is processed into a pulp which is fed to the worms. In turn, the worms eat the pulp and convert it into rich worm cast (Jones, 2014). By implementing this measure, the waste volume going to landfill has been reduced with 90 percent, having great benefits in terms of GHG emissions. Besides the wormery, ExCel has also installed recycling facilities for other materials like paper, plastic and glass (Jones, 2014). For that purpose, the center uses color-coded bins for all events, the campus, onsite partners and hotels (Jones, 2014).

Another good example in terms of waste can be seen at the Cherry Creek Arts Festival (Jones, 2014). The initiative comes from Billboard Ecology. This company came up with the idea of collecting old billboards and turning them into unique products (Billboard Ecology, n.d.). This idea offers organizers the opportunity to reuse materials or to sell them as unique products. The event coordinator of the Cherry Creek Arts Festival followed their example. Over the years, banners were collected and repurposed by Billboard Ecology into tote bags, beach bags and covers. These products were then sold at the festival (Jones, 2014).

Sustainable practices and their environmental impact

In this section, the positive environmental impact of implementing the discussed best practices is discussed. For every selected aspect, environmental impacts will be explored according to different categories. These categories were set up after analyzing the results of the best practices and are based on the main practices that were found.

Transportation

Carbon offsets

Many forms of transportation like travel by plane, bus or car, release vast amounts of CO₂ into the atmosphere. Since CO₂ is the most common greenhouse gas, it is also one of the major contributors to climate change (SEPA, 2012). If the use of carbon emitting transportation cannot be avoided, it is possible to purchase carbon offsets on a voluntary basis. This can either be encouraged to be done by the event attendees or purchased by the event organizers themselves.

Carbon offsets can be seen as a form of trade. By purchasing an offset, you fund one of many projects which aim to reduce greenhouse gas emissions of the atmosphere (Kim & Pierce, 2018). Projects include restorations of forests which help sequestering atmospheric CO₂, updating power plants, factories or rising the energy efficiency of transportation and buildings. These improvements can take place anywhere in the world, as the atmospheric CO₂ is a global problem rather than specific to a certain location (Dowdey, n.d.).

However, there are certain doubts about the validity and effectiveness of these carbon offsets voiced by some environmentalists. One major concern is that the offsetting of carbon emissions can be used as an excuse to produce more emissions instead of trying to reduce the overall carbon emissions in the first place which would be much more effective (Kim & Pierce, 2018). If this is done by large industries, for example due to an unwillingness to improve their emission standards, it is generally referred to as 'greenwashing' (Dowdey, n.d.). Other concerns regard the transparency of the environmental benefit as for example trees need many years to grow and fully use their carbon sequestration capacities, but diseases or fires can destroy them before they even reach this level. Moreover, it must be ensured your carbon offsets actually add something to the current project and provide a baseline to how much GHG emissions the project sequesters or avoids (Dowdey, n.d.).

All in all, carbon offsets should not be seen as an alternative to reduce the emissions but rather as an addition to compensate for the emissions that cannot be avoided. This way carbon offsets make people and businesses take responsibility for their emissions and can be a beneficial support to environmental improvements. It is a solid way of reducing the overall emissions in a short term while it gives room for the development of more permanent solutions (Kim & Pierce, 2018). On the long term these voluntary carbon offsets could stimulate a carbon market or include a carbon tax in the public policies (Dowdey, n.d.).

Sustainable transport

As mentioned before, carbon offsets are only a solution for the emissions that cannot be avoided. Therefore, event organizers should first try to limit emissions as far as they can. Event organizers can promote the use of public transport, walking and cycling as sustainable transportation alternatives.

In the last decades, the use of private cars has grown rapidly (Steg, 2003; MOTIF in Beirão & Cabral, 2007). Between 1950 and 1990, the number of motorized vehicles in the world grew from 75 million to 675 million (Steg, 2003). This development has had various negative environmental impacts. First of all, driving a car generates emissions "of toxic and harmful substances, which, among other things, contribute to global warming, smog and acid precipitation" (Steg, 2003, p. 27). Furthermore, during the production of cars, non-renewable resources are needed, and much energy is used. Moreover, in order for the cars to be able to drive, roads have to be built. Due to the extension of road infrastructures, natural areas are distorted and fragmented. This causes natural habitats to be disrupted (Steg, 2003).

Aviation emissions are generated by air travelling and are the result of the combustion of fuel. The aviation emissions include CO₂, nitrous oxides, water vapor as well as sulphate aerosols and soot (Jardine, 2005). Jardine (2005) states that "the combustion of one kilogram of fuel oil yields 3.15 kilograms of carbon dioxide gas". Compared to the emissions generated at ground levels, the aviation

emissions are significantly higher since several chemical as well as physical reactions can be influenced by the altitude of the aircraft (Jardine, 2005). This mainly refers to the fact, that the increased light intensity at higher latitudes enhances the formation of ozone from nitrogen oxides. Moreover, water vapor, another greenhouse gas which contributes to the global warming, only forms contrails at high latitudes (Jardine, 2005).

As an alternative to driving a car or travelling by plane, people could get to an event through the use of public transportation, walking and cycling. The transportation means that are possible depend on the specific event location and the place where attendees have to come from. For example, one will not always be able to walk or cycle to an event. Besides, people attending an event that takes place on a different continent, are often forced to travel by plane. However, it is important to analyze the different transportation means there are, and to stimulate the most sustainable option when travelling to an event. Many positive environmental impacts can be identified when analyzing the use of public transport, walking and cycling.

Public transport is a sustainable alternative to driving a car or travelling by plane. It is said to be environmentally friendly, and it is even argued to be essential in order to keep cities and urban areas livable (van Oort, van der Bijl and Verhoof, 2017). Public transport is more efficient in terms of energy consumption as well as greenhouse gas emissions. The shift from individual to collective transport “forms the foundation of sustainable transport” (Van Oort et al., 2017, p. 10). Because public transportation can carry multiple passengers on one vehicle, it will reduce the number of cars on the streets and thus the emissions from those vehicles (National Express Transit, 2018; Newnam, 2011). As van Oort et al. (2017) explain, public transport consumes only half of the energy compared to a car. Furthermore, it produces only “5 percent as much CO, 8 percent VOC and 50 percent of the CO₂ and NO_x emissions per passenger-mile as an average car” (Shapiro et al., 2002, in van Oort et al., 2017). Interestingly, the indirect emission reductions by shifting to collective transport, is four times larger than the reductions resulting from direct benefits (van Oort et al., 2017).

Even though walking or cycling to an event is not always possible, they are environmentally friendly means of transportation. The main advantage of walking or cycling is that no pollution is emitted (Gisborne District Council, 2009). More advantages can be identified regarding cycling. For example, bicycles are the most energy efficient transportation vehicles on land. Besides that, in order to produce a bicycle, more than 100 times less material is needed compared to the production of a car (Gisborne District Council, 2009).

In order to inform event attendees about the environmental impacts and to encourage them to use alternative ways of transportation it is advised to advertise this on the event website (UNEP, 2012). This raises the awareness of the event participants as well as influences them in their decision on how to travel to the event.

Catering

Local and seasonal food

The main advantages resulting from the use of local food, regard CO₂ emissions and energy use. As local food does not have to travel far, emissions from transportation are avoided. Furthermore, when purchasing local food, it can be purchased closer to the day of the event, resulting in less use of energy for storage, like energy used for refrigeration (UNEP, 2012). This argument is also referred to with the term ‘relocalization’, which summarizes that “local food systems curb the energy and pollution costs associated with the transportation of food” (Sonnino & McWilliam, 2011, p. 823). Jones (2014) refers to this advantage with the term ‘low food miles’, which means that local food ensures a lower carbon footprint than what it could have been if the food would have “taken a world tour before hitting the kitchen” (p. 207).

The advantages of using seasonal food are similar to the ones described above. Besides seasonal food tasting better, it does not have to travel far to arrive at the event location (Jones, 2014). This saves pollution caused by transportation. As Jones (2014) explains “planning menus around what is seasonal inherently means that you are sourcing locally and fresh” (p. 207), meeting all requirements.

Vegetarian and vegan food

One of the best practices that was mentioned often regarding catering, was to offer vegan and/or vegetarian food. A distinction can be made between a vegetarian and vegan diet. A vegetarian diet is characterized by the “abstention from consuming meat and meat products, poultry, seafood and flesh from any other animal” (Leitzmann, 2014, in Dinu, Abbate, Gensini, Casini, & Sofi, 2017, p. 3640). A vegan diet is characterized by the “total exclusion of any animal-derived substance” (Dinu et al., 2017, p. 3640). In the mid-nineteenth century, the Vegetarian Society coined the term ‘vegetarian’ and defined it as a “range of dietary choices that avoid some or all foods with animal origins” (Fox & Ward, 2008, p. 422). Within this section, this definition will be followed. Thus, there will be a distinction between a vegetarian diet and a non-vegetarian diet. This is done because there are many kinds of vegetarian diets, but these are all better for the environment than a non-vegetarian, or meat-based diet. However, it is important to be aware of the differences between (and phases of) vegetarian diets. As Fox and Ward (2008) explain, dietary choices may change from partial vegetarianism to veganism. In general, it has been found that a plant-based diet is better for the environment than a meat-based diet (Baroni, Cenci, Tettamanti, & Berati, 2007).

Marlow et al. (2009) found that the ecological costs for an animal-based diet are much higher than the ecological costs for vegetarian diets. For example, a non-vegetarian diet makes use of more water, more energy, and more fertilizers and pesticides. A non-vegetarian diet uses 2.9 times more water than a vegetarian diet (Marlow et al., 2009). Within agricultural production, water is needed for irrigation as well as for livestock. Issues related to water that are caused by agricultural production include the pollution of surface water and groundwater, the loss of wetlands and leakage from irrigation systems (Marlow et al., 2009).

Besides using an enormous amount of water, a non-vegetarian diet makes use of more primary energy than a vegetarian diet does. Primary energy refers to the energy that needs to be put into the production of different products, and the energy that is produced by that. For the production of animal products, much more energy is used than for plant products, while plant products return more calories than animal products do (Marlow et al., 2009).

Lastly, non-vegetarian diets used more pesticides and 13 times more fertilizer compared to vegetarian diets (Marlow et al., 2009). As explained by Marlow et al. (2009), “the use of fertilizers represents the single greatest energy input for many crops” (p. 1700). Besides that, when fertilizers are used a lot, surface and groundwater can get contaminated, the air will be polluted, and biodiversity will be decreased (Marlow et al., 2009). The use of pesticides also affects the environment. Pesticide use can result in “residues in food, ground and surface water contamination ... damage to non-targeted species [and] increased chemical resistance in pests” (Marlow et al., 2009, p. 1700).

Importantly, the “the greatest contribution to the differences came from the consumption of beef in the diet” (Marlow et al., p. 1699). As was explained by UNEP (2012), the production of 1kg of beef results in the emission of greenhouse gases “with a warming equivalent to 36.4 kg of CO₂eq”. A CO₂eq refers to a means of measuring how much a certain greenhouse gas contributes to global warming expressed as if it was CO₂. All in all, lowering the consumption of animal-based products will lead to a reduction of the event’s negative impacts on the environment, as well as its carbon footprint.

Organic food

Organic food refers to food that is produced through organic agriculture. As explained by the Food and Agriculture Organization of the United Nations (FAO, 2002), organic agriculture refers to “a process that uses methods respectful of the environment from the production stages through handling and processing” (p. 3). The production of organic food is concerned with the whole system that is used to “produce and deliver the product to the ultimate consumer” (FAO, 2002, p. 3). As Bengtsson, Ahnström and Weibull (2005) explain, organic agricultural practices are more environmentally friendly because they do not use herbicides, pesticides and other nutrient applications on crops. It was found that organic farming results in “less leaching of nutrients and higher carbon storage, less erosion and lower levels of pesticides in water systems” (Bengtsson, Ahnström, & Weibull, 2005, p. 261). Bengtsson et al. (2005) also explains that biodiversity increases due to organic agriculture. Furthermore, it is found that, most of the time, energy efficiency is higher in organic farming compared to conventional farming (Rigby & Caceres, 2001).

Water stations

Providing water stations so that people can fill up their bottles is a measure that has many environmental benefits. By placing water stations, one avoids that new bottles have to be bought. Often, bottles that are sold are made from plastic. First of all, the process of making a plastic bottle produces an enormous amount of greenhouse gases (Jones, 2014). Furthermore, plastic is often not disposed of correctly which causes the materials to end up in places it does not belong and should not be (Jones, 2014). For example, lots of plastic ends up in the world’s oceans. This is an enormous environmental issue for different reasons. First of all, plastics cause sea birds and mammals to get entangled or suffocated. Furthermore, plastic breaks down into small pieces over time, and becomes a toxic magnet due to the material being water-repellent and oil-attracting. The plastic itself also releases toxins. When the tiny pieces of toxic plastic are ingested by marine life, it enters the bottom of the food chain and “are passed up the chain, ever accumulating” (Jones, 2014, p. 257).

Even if plastic bottles would be recycled correctly, reuse is still a better alternative. As was found by Sheehan (2017), “reuse has a fivefold lower greenhouse gas impact than recycling” (p. 5). Reusable water containers have a 98 percent lower impact on global warming than the purchasing and recycling single-use water bottles does (Allaway, 2009 in Sheehan, 2017). There are also other positive environmental impacts when comparing reuse and recycling. For example, reusable bottles have significantly lower acidification and ozone depletion potentials. These potentials were found to be between 97 percent and 99.7 percent lower for reuse compared to the best-case recycling scenario (Sheehan, 2017, p. 5).

Communication and event materials

Aiming for a paperless event

Organizing an entirely or predominantly paperless event significantly reduces the event’s environmental impact. An indisputable environmental benefit that results from organizing a paperless event is the fact that it limits the ongoing worldwide deforestation that is necessary to produce paper and other wood-based products (Jones, 2014). On average, 18.7 million acres of forests are lost to deforestation annually (World Wildlife Fund, n.d.). Deforestation carries several negative environmental consequences such as the loss of habitat for several animal and plant species and its contribution to climate change by disrupting the natural water cycle. A reduction in the number of trees also negatively impacts the amount of greenhouse gasses that are filtered out of the air, which intensifies the speed of global warming (National Geographic, n.d.).

Another positive environmental consequence of going paperless is the reduction of pollution resulting from producing paper. Paper manufacturing (using pulp and paper mills) is a major source of industrial pollution (Sumathi & Hung, 2006). According to the American Forest and Paper Association, the paper industry is the third largest user of fossil fuels (Madden, 2009). The production of paper consists of

several stages, the stages that have the largest environmental impact are wood pulping (emission of sulfur compounds and nitrogen oxides into the air) and pulp bleaching (discharge of chlorinated and organic compounds into the wastewaters), thus making it a significant contributor to the pollution of air, water and land (Gavrilescu, Puitel, Dutuc, & Craciun, 2012; U.S. Environmental Protection Agency, 2016). In general, the production of one ton of paper requires approximately four trees and results in an emission of more than 1.5 tons of carbon dioxide equivalent (CO₂e) (Madden, 2009). Furthermore, 42 percent of the total energy used in the paper industry is generated using fossil fuels (International Energy Agency, 2017). Reducing the amount of paper used at events thus has the potential to have a significant positive environmental impact.

Another positive environmental impact that can be linked to organizing paperless events, is the reduction in the amount of transport that is required to deliver paper or other printed materials at its destined location (e.g. the event venue or the event participant's home address). By reducing the amount of transportation, less carbon dioxide (CO₂), black carbon and ground-level ozone are released into the air, which are the main contributors to global warming (International Energy Agency, 2017). In addition, the implementation of a paperless event can save considerable amounts of water; more than 350 ml of water is needed to produce a single sheet of paper, making the manufacturing of paper a resource-intensive process that produces large amounts of wastewater (Powell, n.d.).

The implementation of a paperless event is undoubtedly connected with an increase in the use of electronic and digital systems and methods of communication. Consequently, considerable amounts of energy are needed to keep these systems running as well as the internet connections they require operating. Potential negative environmental impacts of this rise (such as air and water pollution and emissions contributing to global warming), can partly be offset using clean and renewable energy sources (Union of Concerned Scientists, n.d.).

Using recycled paper

The use of recycled paper instead of producing so-called 'virgin paper' carries several environmental benefits. The most obvious benefit is the decreased demand for wood, which results in less trees being felled. This decline limits the negative environmental impacts of deforestation as they have been discussed in the previous section. When comparing the environmental impact of the production of a ton of recycled fiber to the production of a ton of virgin fiber, significant reductions in different environmental impact areas can be identified. The production of a ton of recycled fiber requires 27 percent less total energy, produces 33 percent less wastewater, generates 28 percent less air particulate emissions and produces 54 percent less solid waste (Bajpai, 2013). The United States Environmental Protection Agency (EPA) presents similar results, arguing that recycling one ton of paper would: "save enough energy to power the average American home for six months, save 7,000 gallons of water, save 3.3 cubic yards of landfill space and reduce greenhouse gas emissions by one metric ton of carbon equivalent" (EPA, 2016). Even when taking into consideration the energy that is needed to collect, transport and process paper waste, the total energy use is still much lower compared to the energy needed to manufacture regular virgin paper (Bajpai, 2013).

Reducing the number of giveaways and goodie bags

Whilst specific details and numbers on the environmental impacts on the use or avoidance of giveaways or goodie bags are difficult to find, an argument can be made why the amount of gift bags offered at events should be reduced or why useful and sustainable alternatives should be offered. Goodie bags often include multiple (promotional) products intended for single-use that are produced in a cheap and dirty manner (Jones, 2014). Most of these products are destined for landfill and end up in the waste streams only days after the event has taken place, thus contributing to overall environmental pollution both in its production and disposal (Jones, 2014).

Avoid the use of disposables

The use of disposable tableware such as plates, cups, glasses, and cutlery, is linked to several negative environmental impacts. Polystyrene tableware in specific is anything but an environmentally-friendly product. Not only is it made from petroleum, which is a pollutive non-renewable source of energy, it is also difficult to recycle and often ends up in the oceans or other natural environments because of its light weight (Jones, 2014). In general, the production of disposables results in a higher amount of greenhouse gas emissions and requires a larger amount of energy, when compared to reusable tableware (Sheehan, 2017). In addition, disposables have a significant impact on the different waste streams. For instance, globally, approximately 500 billion disposable coffee cups end up in landfill on a yearly basis (Woods & Bakshi, 2014). Other types of disposables such as plates and cutlery were not included in this analysis. A comparison conducted by Denison (1998) found that reusable cutlery made from stainless steel only needs to be reused twice (taking into consideration the energy needed to wash the cutlery) to offset the energy use that was required to produce two polystyrene disposable spoons (Denison, 1998, in Sheehan, 2017).

Waste

Waste separation (recycling and composting)

Recycling has many environmental benefits. These include the reduction of energy consumption and reduction of space used for landfill as well as the conservation of natural resources (KS Environmental Group, 2015). Furthermore, recycling improves the environment since it decreases the amount generated as well as increases the recovery and reuse of materials as secondary products (Lansana, 1992).

The conservation of natural resources includes materials such as minerals, coal, oil, trees and water and refers amongst others to the 100 percent recyclability of glass, aluminum and steel. Moreover, the recycling of paper uses 90 percent less water than creating it from raw materials, and it is up to seven times recyclable (KS Environmental Group, 2015). Furthermore, there are huge savings in energy when recovering material from recycling. The energy saved from recycling aluminum cans is 90 to 97 percent compared to using raw materials, recovering glass saves 30 percent energy compared to producing new glass from sand, ash, feldspar, limestone or silica and recycling paper saves about 44 percent of energy (Eureka Recycling, 2008).

Direct environmental benefits of composting include that the generation of methane in landfill is avoided. The greenhouse gas production in industrial compost operations is so little that it can be neglected (Eureka Recycling, 2008). The collected compost can be used to recover energy in the form of heat on an industrial scale (Smith & Aber, 2018) which can be fed in the grid and decreases the amount of energy needed from other sources such as fossil fuel plants and hence reduces the greenhouse gas emissions (Lin, Wang, Li, Gordon & Harder, 2016). Moreover, it can serve as organic fertilizer. This benefits the environment as it improves many chemical, physical, biological and nutritional characteristics of the soil (Stevenson, 1982), as it holds water as well as adds beneficial microbes and nutrients to the soil which enhances plant growth (Geisel & Seaver, 2009). Additionally, organic fertilizers can be used to replace chemical fertilizers and thus reduce the greenhouse gas emissions associated with the production of these artificial fertilizers (Eureka Recycling, 2008). Therefore, there is a huge environmental benefit to ordering recycling and composting services as well as to provide the appropriate bins for separation and ensuring that the separation takes place.

Labelling and assisting with waste separation

A large amount of waste generated in the European Union that could be recycled still goes to landfill or incineration facilities (Ellul, 1995). Eureka Recycling (2008) states that 50 percent of the waste produced can be recycled, and an additionally 25 percent of the remaining waste can be composted. Considering the entire lifecycle of the waste produced, it accounts for 36.7 percent of all greenhouse gases produced in the United States (Eureka Recycling, 2008). To put this in perspective Eureka Recycling (2008)

claims that recycling of all these recyclables and compostables in Minnesota will have the same environmental impact as shutting down 20 percent of the Minnesota's coal power plants, reducing the car usage of every car in Minnesota by two-thirds or using 75 percent electricity in their homes.

This is due to the fact that recycling relies on voluntary participation and not everyone is aware of the environmental impacts this causes (Ralston, 2018). Therefore, it is important to raise awareness amongst event attendees by providing separate bins for waste separation as well as labelling these clearly, so they understand how the local recycling system works. A study by Miller, Meindl and Caradine (2016) showed that prompting students at a university with clear informational signs at the recycling bins increased the rates of recycling.

Another way to promote the separation of waste is the use of volunteers or staff members who assist the event participants with the waste separation. A study by Lin et al. (2016) compared the use of brightly colored bins to promote waste separation with stationing of volunteers at the recycling stations to assist event participants with the sorting. The study showed that the recycling rate increased from 7 percent to 32 percent by using the colored bins and by 34 percent by stationing volunteers at the recycling stations. This indicates that the use of volunteers is slightly more effective since they can clearly communicate and explain how to sort the waste properly.

Donating leftover food

Separating waste is a good way to reduce the environmental impact of the waste generated. Hence, composting food waste can contribute to many environmental benefits previously mentioned. However, leftover food is still a valuable source of energy for human consumption and composting it would result in an energy loss which could be avoided. Therefore, donating food to a charity organization can help to decrease the environmental impact even more. It leads to a decrease of greenhouse gas emissions, a reduced energy consumption as well as savings of landfill and water usage (Palmer, 2008). The not-for-profit organization Fareshare which re-distributes surplus food to charities calculated to save 56 liters of water for every kilogram of food recovered. Moreover, within one year (2008-2009) they saved about 620 tons of greenhouse gases. However, they did not specify how many tons of food they recovered (Palmer, 2008).

Energy

The difference between the environmental impacts of energy that is generated using fossil fuels and energy that is generated using renewable sources of energy (such as wind, sun and water) has been addressed in chapter 1. This section briefly discusses the environmental benefits that result from using energy more efficiently and therefore reducing overall energy use. Energy efficiency can be understood as "doing more work with the same unit of energy" (Di Stefano, 2002, p. 824). In other words, energy efficiency refers to using a lower amount of energy to perform the same function (U.S. Energy Information Administration, 2018). In addition, energy conservation can be defined as any type of behavior that contributes to using less energy (U.S. EIA, 2018). Examples of such behaviors (which were also identified in the content analysis of existing checklists) include turning off unnecessary lighting and adapting indoor heating to the external environment. Using energy more efficiently results in several environmental benefits. Firstly, it reduces the amount of greenhouse gas emissions resulting from both energy extraction and use, limiting the contribution to global warming and the associated climate change (European Parliament, 2015). In addition, improved energy efficiency can offset other potential harmful environmental consequences such as air pollution, acid rains and ozone depletion (Omer, 2009).

Chapter 3 - Current sustainable practices at WUR

Within this chapter, the general current sustainable practices that are implemented at WUR are presented. The first section of this chapter presents what is already happening at WUR in terms of the selected aspects. The second section of this chapter gives examples of best practices that are being performed by event organizers.

Sustainable practices implemented at WUR

Sustainability is an important topic within Wageningen University & Research. According to the University, the importance of sustainability is also expressed within its mission: to explore the potential of nature to improve the quality of life (WUR, n.d.-d; Safety and Environment Department of WUR, 2015). In fact, it is stated that “Wageningen UR stands for sustainability” (SED of WUR, 2015, p. 5; WUR, n.d.-d). The University tries to integrate sustainability within the offered educational programs, the research that is done and its operational management (WUR, n.d.-d).

A major project that WUR is a part of, is the Wageningen Climate Plan 2017-2021. The aim of this plan is to become climate-neutral in Wageningen in 2021. As the University explains (WUR, n.d.-d), many different activities and projects are carried out for this goal. The focus of these activities can be on all sorts of issues, like energy, waste and mobility (WUR, n.d.-d). For example, the University generates its energy with wind turbines in Lelystad. Besides that, WUR makes use of biomass combined heat and power, thermal storage and solar panels for its energy generation.

An activity that WUR performs yearly, is the measurement of its climate impact with the CO₂ footprint. The University's footprint is measured in line with the ISO 14064-1 norm, which is in turn based on the Greenhouse Gas Protocol (WUR, n.d.-b). The ISO 14064-1 norm “specifies principles and requirements at the organization level for quantification and reporting of greenhouse gas emissions and removals” (ISO, 2009).

Due to being part of the Wageningen Climate Plan and measuring its footprint every year, WUR has implemented multiple improvements aimed at reducing their carbon emissions. For example, in 2017, the University's emissions were reduced with 51 percent compared to 2010 (WUR, n.d.-d). Moreover, in 2017, 100 percent of the energy consumed at WUR was generated through sustainable methods (WUR, n.d.-c).

There are also other activities performed by WUR to promote sustainability. An example is the ‘Green Man’, a man in a green suit going around campus. The aim of the ‘Green Man’ is to raise awareness for sustainability, both among employees and students. He does this “by making film clips, by means of fun activities during the introduction days and by attending days like Sustainability Day” (WUR, n.d.-h). Another good example of sustainable activities is the existence of a Green Office. This office ensures a sharp focus on sustainability at WUR “by posing critical questions about sustainability” (WUR, n.d.-e). Besides, Green Office Wageningen organizes several activities to raise awareness of the importance of sustainability. Examples of the activities that this office undertakes are the Green Teacher Award, Meatless Monday, GreenMatch and the Seriously Sustainable Week (WUR, n.d.-e.).

The sustainable activities performed by WUR do not go unrecognized. In 2017, WUR was ranked by GreenMetric as the “greenest and most sustainable university in the world” (WUR, n.d.-d; Science Guide, 2017). Besides that, WUR has been the most sustainable university within the Netherlands from 2013 to 2017. In 2018, WUR reached the second place in this ranking (Studenten voor Morgen, 2018).

All in all, Wageningen University & Research performs well on sustainability issues in general. Until now, however, no policy exists on how one should organize an event in a sustainable way. Below, the current situation concerning the specific four aspects this research chose to focus on, will be explored. The general situation regarding these aspects will be explained first. Then, the event situation will be explored and compared to the normal situation. Because there is no policy on sustainable events at the WUR, it is important to see how each of the aspects work out in practice when events are organized.

Accommodation

Event situation

As stated in the introduction, the aspect of accommodation will not be included. However, in the interviews some questions on accommodation were asked to have a check whether the reasoning used in the introduction was correct. Firstly, in the interviews it was found that organizers would like to have an option for sustainable accommodation at the WUR campus. However, this is lacking at the moment and therefore they need to go elsewhere. Secondly, the choices in accommodation elsewhere were limited. Thirdly, most organizers did not need or arrange accommodation. Therefore, accommodations was not an aspect on which it was possible to give recommendations in terms of sustainability.

Nevertheless, within the interviews it was found that the WUR has contracts with certain accommodations, making the choice restricted to these options. The positive side is that these accommodations are often lower in costs.

Transport

General situation

Currently, 57 percent of WUR's employees cycle to their work, while only a third uses the car to get to work on a daily basis. Still, due to the high concentration of buildings and activities at the campus of WUR, traffic to and from the campus has increased. As explained in the annual environmental report of 2017, "aviation and commutes by car are by far the biggest contributors to the carbon footprint" (Safety and Environment Department of WUR, 2018, p. 15). WUR states that it has taken several initiatives to increase sustainable mobility (WUR, n.d.-f).

On the campus, 'High-Quality Public Transport' is installed (WUR, n.d.-f), which is a system "characterized by its ability to effectively meet the mobility needs of people" (Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany, n.d.). This system is supposed to stimulate people to use public transport. Böhler (2010, in Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany, n.d.) explains that such a system needs to be accessible, fast, reliable, affordable as well as attractive. Other measures taken to stimulate the use of public transport are new bicycle routes as well as a bicycle dispenser placed at the public transport stop at the University.

Besides promoting the use of public transport, WUR tries to reduce the number of commuting hours. One way they work towards this goal is by using videoconferencing. Using videoconferencing for a meeting or a presentation where possible saves on travel time, expenses and CO2 emissions (WUR, n.d.-f; SED of WUR, 2018). Besides trying to reduce commuting hours, WUR tries to offer advantages to sustainable transportation vehicles by installing electrical charging points for electric cars, e-bikes and e-scooters (WUR, n.d.-f). At this moment, WUR offers 18 different charging stations at the campus, which are all open to the public (SED of WUR, 2018). In the annual environmental report of 2017, it was stated that there has been an increase in the use of the charging facilities (SED of WUR, 2018).

Event situation

In the interviews it was found that transportation is an aspect that differs greatly among the various types of events. At the Open Days prospective students are visiting the campus together with their

parents and often they travel by car. For WURtalks most of the attendees live in or near Wageningen and thus travel by bike or bus. For ELLS most attendees do not live in the Netherlands and travel by plane. Due to these differences in the organization of transportation per event, it differs what improvements can be made to make the transportation of the events even more sustainable.

Since there is no train station in the city of Wageningen or near the campus, it is more difficult to get to the University by public transport. Consequently, many people from outside of Wageningen that visit events at the campus travel by car. According to one of the interviewees, this makes transportation an area that Wageningen as a whole can improve on.

Most event organizers communicate all the possible ways of travelling to Wageningen to their attendees, which includes information on travelling there by public transport but also going there by car. As one of the event organizers stated in the interviews, it cannot be said that Wageningen is easier to reach by public transport than by car, because many people will disagree. The organization of the Open Days arranges twice as much busses between the station Ede-Wageningen and the campus of Wageningen, in order to encourage people to use public transportation to get to the University.

It resulted from the interviews that several event organizers try to organize the entire event on campus, effectively eliminating the need for transportation during the event. When the attendees do have to be mobilized at the campus, attendees mostly move around the campus by walking or biking. However, for some events cars are arranged to bring attendees from A to B. For example, at the Open Days, the organizers arranged cars that drive between the Leeuwenborch and the campus to transfer the attendees. Nevertheless, attendees are also encouraged to walk between the two locations, often guides are available to provide attendees with directions. For the 100 years WUR events, electric cars were arranged for people that had difficulties with walking. For walk along days bikes are rented and also for the ELLS conference bikes were arranged.

Catering

General situation

The Wageningen University & Research works with different caterers. In the Forum, Atlas and Gaia buildings, Cormet SchoolCatering is the active caterer. In the Leeuwenborch building, Good Food Catering is the caterer. In the Orion building, OSP is the caterer. Lastly, in the restaurant in Impulse, Sodexo takes care of all catering-related activities. In addition, alongside several other criteria, each of these caterers has at least partly been chosen based on their sustainability policy. All of them meet the sustainable procurement guidelines that were issued by Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland/RVO).

On the website of WUR, it is explained that these caterers, together with the University, have the goal to only sell sustainably produced and healthy products in the restaurants and vending machines (WUR, n.d.-a). It is stated that caterers are committed to being sustainable and that this can be seen in, for example, products that are sourced locally, croquettes that are made from mushrooms cultivated in coffee grounds and the sale of reusable bottles that can be filled by the caterer (WUR, n.d.-a).

Currently, more than 50 percent of the products come from sustainable sources. Furthermore, 75 percent of the products offered are healthy, or moderately healthy (WUR, n.d.-a). Besides that, more than 40 percent of the purchased products “are guaranteed organic, free of pesticides, artificial fertilizers and genetic manipulation, and produced with close attention to animal welfare” (WUR, n.d.-a). The University also serves sustainably farmed coffee and tea, coming from plantations with Max Havelaar Fairtrade and the Rainforest Alliance certifications (WUR, n.d.-a).

Event situation

When it comes to catering, almost all events use the contracted catering suppliers of Wageningen University. When catering is needed on campus, event organizers are obliged to use the caterer belonging to a particular building. When there is no caterer present in the building where the event is organized, the event organizer has to choose for one of the four caterers from the other buildings. According to one of the interviewees, most of the times the services provided by Cormet or OSP are used. However, when organizers want a very sustainable meal option, they often go for GoodFood catering from the Leeuwenborch as they are considered to be the most sustainable caterer on campus.

As stated in several interviews, all of the four catering providers at WUR already are quite sustainable. For example, Cormet offers sustainable soups, and they use edible food wastes when producing other food, which is called rest processing. Moreover, they offer both vegetarian and vegan options as well as several seasonal alternatives. Another example of sustainability of the caterers is that all caterers of the WUR agreed on organizing Meatless Monday on a weekly basis. For Cormet, this means that on Mondays 90 percent of the products they sell are only vegetarian and some of them are vegan.

For events, the caterers have banqueting folders from which the event organizers can make a menu selection. Apart from the banqueting options, the caterers offer a lot of opportunities for menu customization. If event organizers would like to see alternative food options, Cormet can arrange this for them. For example, Cormet prepared algae smoothies because this was requested by an event organizer. From the interviews it appeared that several event organizers are putting serious effort into choosing the healthier food options for the events.

In the interviews, it became clear that many event organizers are currently working on reducing the amount of food waste they produce. Reducing food waste can be done in several ways. Examples include minimizing what is bought, gaining knowledge on what people eat on a day and how to offer food. Another example is ensuring that the number of event attendees are correct. Some event organizers even decided to no longer offer lunches at events due to the amounts of food waste these lunches produce. When an event produces a large amount of leftover food, there are alternative disposal options available such as the Voedselbank or Thuis. Based on the interview results, both the Annual Introduction Days (AID) and the Euro League for Life Sciences (ELLS) donated food leftovers to other parties that could make use of the food.

In the interviews it was found that in addition to the event organizers, the caterers are also implementing certain strategies aimed at reducing food waste. Cormet stated that they pay close attention to what they buy. Required amounts of food are monitored daily and if needed orders are canceled a few days in advance. According to one of the interviewees, it is also important to pay attention to how food is offered to event attendees, an example of such a consideration is portion size. A constraint that negatively impacts the reduction of food waste, is the overall Dutch health and safety regulation that states that food has to be thrown away two hours after the food gets out of the fridge. One way to deal with this challenge, is that during lunches (for example during the Open Days) food is offered in batches rather than presenting all of it at once. Moreover, Cormet also offers doggy-bags that allow attendees to take home leftover food.

Communication and event materials

General situation

According to WUR, the University purchases 100 percent sustainable materials. The University purchases are in line with the sustainability criteria of Netherlands Enterprise Agency (RVO). The WUR has a sustainability panel, that provides a lot of input regarding sustainable procurement. The procurement department evaluates each procurement contract there is to see whether things can be improved in terms of sustainability. At the same time, the purchasers include sustainability aspects into

their project plans and final reports. The procurement policy applies to products as well as services. The procurement department evaluates the sustainability of all purchases each year, through a so-called 'sustainability scan'. This scan is based on the sustainability criteria of the RVO. In 2013, WUR achieved 100 percent sustainability in procurement (WUR, n.d.-g). The University gives different examples of sustainable procurement. An example is that all copy paper that is purchased is in accordance with the EU guidelines on Ecolabels and FSC Mixed and Controlled Wood (WUR, n.d.-g).

The use of hard-copy catalogues and leaflets in purchasing is now also discouraged; all purchasing is done digitally. Ordering and invoicing procedures now also take place digitally. Because WUR deals with many orders and invoices, the use of paper and ink, as well as the use of postal services, has been reduced significantly (WUR, n.d.-g).

Event situation

In terms of materials, interviewees often mentioned the term 'sustainable gadgets'. The Dopper was repeatedly mentioned as a reusable water bottle. Cormet sells the Dopper at their food court. ELLS and Wageningen Academy provided their attendees with a free branded Dopper with logos. The AID sold the Dopper and lunch boxes to attendees during their event. In the interviews it appeared that several event organizers were aware of the negative environmental consequences associated with the use of plastic bags, and therefore refrained from using them. For example, the AID provided jute bags to the attendees. One of the event organizers argued that if you truly are sustainable, goodie bags are not offered to attendees anymore. 100 years WUR even decided that all their gadgets had to be sustainable. For example, a lustrum WUR sweater was available for sale that was made of only recycled materials. Another example of a sustainable gadget was the reusable coffee cup that AID gave to their crew members. In some of the interviews, organizers indicated that second-hand materials such as badges and t-shirts were supplied to event volunteers.

In terms of communication, it was found that organizers regularly try to reduce the amount of paper used during the event. WURtalks and Open Days did not print paper tickets but instead send a QR code that attendees had to show upon arrival at WUR. ELLS used a mobile app to provide both the participant lists and the program to the attendees. Cormet still uses a printed folder to provide interested parties with information on banqueting. They are currently working on the development and implementation of an app that can be used to show banqueting information and menu options. OSP already uses a similar mobile application.

The results from the interviews showed that several event organizers attempt to reduce the number of printed posters and flyers. For various events, only a limited number of posters were used instead of a lot of flyers. For example, for the Open Days less brochures are ordered. The AID is working on reducing the flyers from associations. Impulse uses the website and monitor screens for event-related promotions. WURtalks even exclusively promoted their event online. In addition, WURtalks provided no handouts for the attendees, nor materials for the speaker, and they even put the recording of the event online afterwards. Course folders are usually still offered to participants by Wageningen Academy. On some occasions, they did not provide the course folder on paper but digitally on a USB-stick. Both Wageningen Academy and ELLS usually conduct their post-event questionnaires digitally.

Waste

General situation

According to WUR, the University produces around 2 kilotons of waste each year (Wageningen University & Research, n.d., i). The waste generated at WUR is separated at the source in every building (WUR, n.d.-j). In 2017, 58 percent of the generated waste was separated (Safety and Environment Department of WUR, 2018).

The general approach towards waste taken by the University follows Lansink's Waste Hierarchy (WUR, n.d.-j). This means that WUR's waste management gives priority to environmentally friendly methods of processing waste. For example, WUR prefers to prevent waste from being generated. If this is not possible, WUR prefers to reuse the waste. If this is not possible, it aims to recycle the waste. From highest priority to lowest priority, Lansink's Hierarchy involves the following steps: prevention, reuse, recycling, energy recovery, combustion and disposal. The first four steps are the ones having a useful purpose, while the last two options are focused on disposal only (WUR, n.d.-j).

Agreements have been made with waste processing companies with the aim of processing waste sustainably (WUR, n.d.-i). The agreements include multiple implementations. For example, the waste produced at WUR is now collected on a set route and a set day. This reduces the amount of transport kilometers. The route is also assessed each year to see if the route that is taken is still the optimal route. Another example is that green waste produced at the University is used as compost on the campus of WUR.

In the Orion and Forum buildings, among others, the 'EcoSmart' concept is used for waste collection (WUR, n.d.-i). This concept comes from Renewi, the company that WUR has a contract with, and entails that 16 different waste flows are separated. The largest waste flows are the following: paper, cardboard, plastic, biodegradable waste, packing material and general waste. The advantage of the EcoSmart concept is that many materials can be reused. The ultimate aim of EcoSmart is to reuse 100 percent of all waste generated (WUR, n.d.-i). In the Forum building, the generation of waste is reduced with 25 percent since 2009 due to using Renewi's EcoSmart method (WUR, n.d.-j).

Another recently implemented measure, is the introduction of Cup2Paper cups. These cups are environmentally friendly and can be recycled along with paper (WUR, n.d.-a).

Event situation

According to the waste manager of WUR, Wageningen University puts in significant effort to reduce the amount of waste that is produced. In the interview it was stated that when looking at the Ladder of Lansink, the top priority is not waste separation but waste prevention. At this moment, the University has developed an informal plan to reduce the production waste and to improve waste separation percentages. However, every event organizer is individually responsible to manage the amount of waste that is produced as a result of organizing the event. The type and structure of an event directly influences the types of waste that are produced. The waste manager of WUR argued in the interview that you can estimate what type of waste there will be, how much and what kind of containers are needed. It was argued that waste can be divided into two categories: reusable and recyclable. It is best to reuse a product and if that is not possible, the material can be reused. This is called recycling. Clear waste bins are needed in order to facilitate these waste-related practices.

Another result from the interviews was that the separate EcoSmart waste bins are provided by the waste handling company Renewi. Renewi works with five different waste streams that are all picked up separately. When organizing an event at the campus, within the buildings the organizer must use the facilities that are in the building, and outside the University, the firm Renewi must be contacted. Another important rule is that none of the waste can come into direct contact with the ground.

In the interviews it was found that many event organizers, such as the organizers from the Open Days and Wageningen Academy, make use of the existing waste management strategy and flows in the education buildings when they organize an event at Campus. In addition, the AID has implemented a waste separation policy. The 100 years WUR used the current waste management company for the waste separation provided at the pavilion and waste separation was an overall standard for all events, included during parties.

From the interview with the organization of the Open Days it was found that they are continuously working to increase waste separation, especially the separation of paper. However, it was unknown whether the rest of the waste was also separated correctly. Especially in the Orion building during the Open Days, large amounts of waste were produced. In Impulse, which is another on-campus event location, four separated trash bins are used. Even so, it was believed that similar waste separation bins will be placed on the outside terrace in the near future.

Waste resulting from catering activities, is also a point of attention. An important element that emerged from the interviews, is that many event organizers are trying to reduce the overall use of plastic. One of the interviewees stated that it would be good if there are no plastic waste products anymore and recommends limiting and where possible avoiding the use of different types of materials at events, like paper plates, plastic cups, and spoons. Using products made from the same type of material results in the production of less waste, which means that less waste needs to be separated.

The AID has chosen to offer group packed lunches instead of individually packed lunches as this limits the amount of packaging material that is needed. Wageningen Academy does not provide individually packaged but group packed cookies for the attendees. The lunches of Cormet are also not packed and put as a whole on a plate. In addition, window-bags are no longer provided the cash desk. Window-bags are paper bags with a transparent plastic window that can be used to package certain types of food products.

It was found in the results of the interviews that Cormet tries to limit its use of plastic as much as possible. Examples include the limited use of straws and disposable cutlery. Instead, stainless steel cutlery is used. Unfortunately, the use of steel cutlery resulting in an unforeseen negative side effect: it gets stolen by students. As a result, Cormet had to return to using disposable cutlery. Many organizers try to avoid the use of plastic cups, instead durable paper cups, hard plastic cups, glasses or ceramic mugs are used. Impulse uses these types of products because they aim to achieve a certain quality and attendee comfort level. At certain events, Wageningen Academy only uses plastic water bottles. The AID decides to avoid the unnecessary disposal of water bottles. The ELLS also decided not to use plastic or disposables tableware at their event.

Energy

Event situation

As explained in the first chapter, within this report less emphasis is placed to the aspect energy. However, in the interviews it was still a topic of conversation, as it was believed to be a valuable way to gain more information on whether improvements can be made regarding energy use. Almost all interviewees were aware that the energy from WUR was green energy that came mostly from wind turbines. Therefore, they felt like it was not a factor to take into account and no one mentioned that they consciously were trying to reduce their energy use. Some interviewees mentioned that they used a green battery as emergency generator, such as the 100 years WUR did. At the same time, 100 years WUR also used an air conditioning that was fueled using diesel.

Other sustainable practices from interviews

Event situation

Aside from the specific aspects that were addressed during the interviews, several other sustainable practices resulted from the interviews. Organizers held a campus tour that focused on sustainability or they simply introduced how sustainability is integrated at the WUR. In addition, ELLS provided information regarding sustainability on their website. The AID communicated how sustainable the event was with information on the toilets. Moreover, visibility resulted to be an important element. For example, the Open Days used bags from bioplastics but one year, there was no information on the bags that they were made from plants, so they got complaints from attendees. 100 years WUR thought about sustainability in the broad sense, by evaluating which events will be organized again after the lustrum

year. They also let all sorts of regular events use the pavilion, leading to a more efficient use of the facility. Another practice was to put sustainability in the main goals and to keep communicating this during staff meetings.

Best practices at WUR derived from the interviews

Based on the interviews with event organizers and also facility staff, several best practices were identified that are already implemented by some of the event organizers at WUR. For some of the event organizers, significant overlap exists between what they currently do and what their sustainable best practices are. Consequently, the following section might repeat some topics that have been mentioned before.

Transportation

During the interviews, two best practices that are related to transportation were identified. Firstly, offering bikes to the attendees can be seen as a best practice. For the Open Days, offering bikes could result in reducing the number of cars driving between the two locations of the event. Moreover, it was stated in the interviews that going to the other location by bike can also save time because the car needs to drive around the campus. For the ELLS, the bike rental resulted in less busses between the different event locations.

The second best practice that came up in several interviews is increasing the amount of busses that drive between the train station Ede-Wageningen and the campus. At this moment, many people from outside of Wageningen travel by car when they go to events at the campus. Increasing the number of public busses makes public transport a more attractive option because busses are going more often and it will be less crowded in the busses. Also, from an organizational point of view, extra busses are needed for the amount of people that visit the event. For instance, the Open Days with more than 8.000 visitors have doubled the number of busses.

Catering

Regarding catering, a lot of concern was expressed about food waste. Two best practices have been identified from the results of the interviews that are already implemented at some events at WUR. The first practice is to ensure that the number of attendees are correct. When the number of attendees is correct, the caterer can minimize what needs to be bought and less food gets thrown away post-event. Therefore, as argued by one of the interviewees, this also saves money.

The second practice that was found in the interview results is offering lunch in batches. This best practice has to do with the general health and safety regulation mandating that food needs to be thrown away two hours after it was taken out of the fridge. In the interviews it was found that at the Open Days lunch is offered to the students that work at the event and they used to have a lot of food left over at the end of the day. Now that they use batches, not all food is already presented and therefore less food needs to be thrown away. Cormet also stated that this helps to reduce food waste and that they have implemented this now for most of the events and also in their own restaurant.

Communication and event materials

Regarding communication and event materials, two best practices were identified. The Dopper is one of the best practices in terms of encouraging attendees to use sustainable gadgets. The Dopper is a reusable water bottle, designed in the Netherlands and produced in a climate neutral way. Using reusable water bottles significantly limits the use of many plastic single-use water bottles and therefore also reduces waste. It can either be sold at an event or it can be gifted to attendees, for example with a logo of the event on the bottle.

For communication, a best practice is the use of email or an app to provide event information. The use of digital information sources reduces the use of paper. An online platform or app can be used to provide attendees with the program and ticket of the event, for example by using a QR code. An app can also be used by the staff, for example to access participant lists or other behind-the-scenes information. Another party that benefits from using an app is the caterer: it makes providing menu and banqueting information easier and more sustainable.

Waste

When looking at practices to reduce waste, one of the best practices is the reduction of packaging of lunches and snacks. Several events have stated in the interviews that they no longer offer individually packed food. One of the possible ways to make the reduction of packaging happen is using a group packaging method. An even more sustainable alternative is presenting food on a tray or buffet, doing this eliminates the need for packaging material entirely. By offering the food in alternative ways, less packaging is required and therefore less packaging needs to be thrown away.

A second best practice regarding waste reduction is making sure that if there will be waste, there are at least less different types of waste products. For instance, if there are several suppliers it would be best to ask all suppliers to use the same material. Having the same type of waste has the benefit of not having to order all types of waste bins. Moreover, it also helps with the general problem of people not separating very well.

Chapter 4 - Opportunities to improve, benefits and constraints in improving sustainability at WUR

Within this chapter, results from the interviews on potential improvements regarding sustainability are discussed. In the first section, opportunities, future plans and other ideas for improving the sustainability within events are discussed. At the same time, the interviewees were encouraged to think of the benefits certain improvements could bring. In addition, they were asked to provide information on potential constraints associated with implementing certain improvements.

Opportunities for implementing sustainable practices

Several opportunities for the event organizers to improve in sustainability were found in the interviews. In this section, opportunities can be understood as ideas that event organizers have on improving sustainability but that they are not yet implementing.

Transportation

One of the interviewees stated that she would like to see paid parking implemented on campus, as she believes that this would reduce the amount of people going to the campus by car. Moreover, the interviewee identified the possibility of arranging more busses when a large congress of event is happening on campus. Another possibility that was mentioned was to have bikes available at the Open Days to transfer the attendees from the campus to the Leeuwenborch, instead of having vans driving between the two locations.

Communication

Several opportunities that event organizers mentioned were about communicating the sustainability of their event to their attendees. One of the opportunities mentioned in the interviews was within promotion and materials to show the different sustainable parts of the WUR campus. Also, another interviewee was interested in creating an informational flyer containing numbers on sustainability. Cormet would like to have an app to communicate current sustainability practices to their customers.

Another aspect is communication to the attendees about the event itself. It was stated in the interview that it is a lot of work to create an app for the event and that it would be very useful if the university could create a general app that can be used and customized for all events. The app should include the programs of the events, lists of attendees, and other practical information.

Waste

One of the interviewed event organizers argued that it is of importance what you do with the waste, in case you have waste. One of the opportunities to implement residual waste processing is growing insects on the waste from catering. The waste manager of WUR stated that you need to make sure that if waste cannot be prevented, at least it needs to be made mostly from the same material. The Annual Introduction Days (AID) committee is investigating if it would be an option to separate the waste after the event. In that way, at the event itself the attendees do not have to separate but the crew can separate it afterwards, it is believed that doing so will ensure that waste is separated correctly.

Other opportunities

One of the event organizers mentioned some options for compensating the environmental impact of their event. The first option was to donate a certain amount of money to organizations that are involved with planting trees. Another option to compensate for the environmental impact of an event would be to donate a set percentage of the event fee paid by the attendees to a charity aimed at reducing or offsetting negative environmental impacts. One of the event organizers would like to check the options

on using grey water. This means reusing relatively clean water instead of filtered drinking water to for instance flush toilets. Lastly, the organization of the 100 years WUR stated that it would have been more useful to have a conversation with a sustainability expert earlier in the event preparation process, for example two years before the first event.

Future plans for implementing sustainable practices

It was found that some facility staff members and event organizers already had more concrete plans for the future. In this section, future plans can be understood as improvements that the event organizers are already working on.

Transport

Regarding transport, the Safety and Environment Department of WUR has developed a mobility vision and agenda. Therefore, they are working on developing concrete plans for improving sustainability. For example, funds are available for improving the bicycle racks at campus, making cycling a more attractive means of transportation.

Communication plans

Another important topic was found to be the visibility of sustainability of the event. An organization that was working on this was the AID. Communicating how sustainable an event is can be done by making sustainable practices visible at the place where it is applicable. An example of a plan of the AID is to include a QR code on the hard-plastic cups that attendees can scan to receive more information on sustainability of the hard-plastic cups. Moreover, the AID is working on determining what exactly is the right moment to provide attendees with information about sustainability. In order to do this, it is important to identify the different contact points with attendees.

Waste reduction plans

Several interviewees mentioned that they are working on waste reduction. For instance, the Open Days organization aims to get rid of all the paper printed programs. Currently, they are already sending the programs online by email. Also, the ELLS hopes to get rid of all printed materials by developing an app. At this moment most students use this app, but staff members do not use it as much. In one of the interviews, it was mentioned that the government wants less residual waste and therefore the University also has to improve. In line with this, WUR's Safety and Environment Department developed plans to reach set goals in waste reduction.

Biodegradables

One of the topics related to waste reduction that was mentioned in several interviews, was the use of biodegradable disposables. Biodegradables are materials that will naturally decompose to organic matter. One of the interviewees mentioned that biodegradable disposable items are the future. For instance, Cormet is already working on implementing biodegradable materials into their catering practices. Cormet has already bought cups, plates and cutlery that are biodegradable.

Benefits of implementing sustainable practices

In the interviews with facility staff and event organizers, several benefits of being or becoming more sustainable were found.

Costs

A prime benefit associated that can be associated with becoming more sustainable is the potential to reduce costs. An example that was found was that reducing food waste also saves money because the

event organizer has to order less food. In the case of Wageningen Academy, it saves money not to print a course folder.

Repetition of practices

There were also benefits found related to repetition of sustainable practices. To illustrate, since the AID is separating waste already for a couple of years, the mentors that help at the AID already know that there will be waste separation. Therefore, they already know how waste separation works and can help the new students with the separation of waste. Another benefit that has to do with repetition of practices is that the money spent on improving sustainability was not spend for just one event. When the event is organized on a more regular basis, the investment to improve sustainability was an investment for a longer period. This was one of the aims for the organization of 100 years WUR.

Practical benefits

Practical benefits were also often mentioned. Firstly, there were some practical benefits related to the campus. For Wageningen Academy, a practical benefit of everything being organized at the campus, is that the campus is nearby for teachers of the WUR. For the ELLS it was very convenient to use the caterers at the campus so that the organization did not have to move a large group of people to a location off campus. At the campus, walking had the practical benefit that it actually took less time than going by car. At the Open Day, walking is therefore promoted between the different locations.

The AID mentioned a benefit of having local suppliers. It was mentioned that they are easier to talk to. If there is a problem, a local supplier can be faster at the location to solve it. A last practical benefit is on preparation time. If Wageningen Academy does not offer a course folder, no time is needed to make those folders. In addition, it also provides extra time for the lecturers to work on their presentations.

Constraints of implementing sustainable practices

In the interviews with facility staff and event organizers, several constraints that limit being or becoming more sustainable were found.

Budget

During the interviews, budget was often mentioned as a constraint. None of the organizers had a specific budget available for sustainability. Sustainable practices need to be paid from the regular budget. This might lead to organizers only implementing practices that also save money. If the easy things that save money have already been implemented, there are no further incentives to move forward. For the AID, additional sustainable improvements can only be achieved by organizing the event in a completely different way. Lack of time and funds limits them from implementing additional sustainable event practices. Therefore, there is no real incentive to move forward. For free events like ELLS, it is even harder to implement changes that cost money.

Transportation

Regarding transportation, the main issue that was mentioned is that Wageningen is not conveniently located near a railway station. According to one of the event organizers, it cannot be said that it is easier to travel by public transport because many people will not agree on that. On events where many people come by train such as the Open Days, a downside is that train delays will influence the entire program. It was also mentioned that one cannot force people to take a certain means of transportation. A measure to stimulate people to not take the car is implementing paid parking. However, one of the interviewees of WUR's Safety and Environment Department thinks nobody wants to make parking paid. Paid parking is a sensitive subject on which involved parties can have strong opinions. Another option could be carpooling, but it was mentioned that organizations are not allowed to share personal information of the attendees for car-pooling, due to privacy regulations. The organizers could also arrange the transportation, but it was mentioned that this takes too much time, money and energy. For transport

within Wageningen, attendees could ride a bike. However, ELLS mentioned that especially international attendees are not always able to ride a bike. Bikes are also not an option if the attendees must be transported to a location further away. Wageningen Academy mentioned that it was not always possible to organize the excursions for their courses closer to the WUR campus.

Food

There were also constraints in terms of food found. Cormet mentioned that if you do not offer the cheap, unsustainable and unhealthy options, people will buy their food elsewhere. It was also mentioned that meat is always a point of discussion. If the default catering option is vegetarian, event organizers might get negative responses from attendees. Event organizers are restricted to the contract caterers as first choice. Only if they cannot offer what the organizers need, they can consider other caterers. However, this does not have to be a big issue regarding sustainability as it was also mentioned that the contract caterers were quite sustainable. Lastly, there were regulations found that lead to food waste. For example, caterers are not allowed to distribute leftovers. If people paid for a buffet and decide to hand out the leftovers, it is their responsibility. However, if the caterer distributes the leftovers, it is their responsibility if anything happens to the attendees. Cormet also mentioned that they must throw away the food on the buffet after two hours.

Communication

It was mentioned in interviews that organizers experienced problems in the communication with attendees. The attendees often did not pay attention to information on sustainability or were not interested in the information. For example, Cormet has a list of sustainable practices at their canteen, but they mentioned that people just do not notice it. According to the AID, attendees are in general just not interested in information on the sustainability of the event. Moreover, it was not one of their top priorities to make the sustainability more visible.

Waste prevention

In terms of waste prevention, it was mentioned that implementing certain sustainable practices was difficult. Wageningen Academy mentioned that some professors and experts value the course folders and want to maintain them instead of providing digital materials. Attendees of their courses also mentioned that they liked to write on paper. Another issue was that the response is lower with a digital questionnaire. Therefore, course teachers asked for a paper questionnaire instead of a digital one. The AID tries to minimize the number of flyers but runs into the problem that people still think that flyers and booklets are the easiest and cheapest way to promote themselves. ELLS tried an event app instead of a program and participant list, but this was still uncommon and not everyone was used to an event app.

Waste separation

For waste separation, there are many constraints, as mentioned by the waste manager of WUR. Firstly, the organizers need to arrange a lot of bins to separate all the waste. For the use of hard plastic cups, there is a place to rinse the cups needed. Then there is the risk of contamination of the waste flows. For example, with the BBQ of the AID, there was a lot of contamination of the waste products. If it is the first time that people encounter waste separation, there is also a bigger chance that waste separation is not performed correctly. Moreover, if attendees come to the event to party, their priority is not separating their waste correctly. Therefore, not everything that is separated is of good quality. If the quality of the separated waste is not good enough, the separated trash bag must be considered as residual waste. That is all just the user side of waste separation. There are also constraints for waste reduction at the backside of the event. All suppliers have their own types of disposables, which makes it hard to separate correctly. Therefore, organizers must agree with the suppliers on the types of materials, but this is not possible for every event. Splitting waste afterwards is also no option as it will cost money and volunteers will never want to do it, according to the AID. The organizations also do not have to conform to sustainability requirements as there is no written policy from the WUR.

Tableware

A sustainable option for tableware would be to offer dishes and stainless-steel cutlery at events. However, caterers run into the problem of students stealing the cutlery. Cormet mentioned that near the end of the season, all their cutlery is gone, and they can only offer single use plastic. Another sustainable option is the use of biodegradables. However, at campus there is no option to recycle biodegradables. Therefore, Cormet is not allowed to introduce biodegradable cutlery. Even if there was recycling of biodegradables, there would be the problem that a biodegradable fork and knife look like plastic and therefore be thrown into the plastic container. Cardboard plates are an option, but then there is the issue that those are not pleasant if you want to take food with you.

Lack of knowledge

Lastly, event organizers mentioned that they lack knowledge on sustainable practices. Most organizations did not have someone with specific knowledge on sustainability. ELLS mentioned that they do not have the facts and figures, nor do they have the time to research this. Furthermore, AID said that you must do quite some research before you really know what the more sustainable option is.

Chapter 5 - What are ways to motivate event organizers to improve sustainably at their events?

This chapter starts with an overview on the current motivation among event organizers to improve the sustainability of their events. Thereafter, results from literature review are provided on stakeholder motivation theories and methods. These methods are applied to the motivation of event organizers, which are the main stakeholders. Furthermore, results on how to motivate event organizers that were retrieved from the interviews are discussed within this chapter. By elaborating on theories, methods and other ideas on how to motivate the stakeholders, and elaborating on the need for motivation of stakeholders, an advice for Green Office Wageningen is developed which can be found in the next chapter.

How motivated event organizers are currently

In the interviews, it was found that sustainability is quite new for a lot of event organizers, but at the same time organizers are getting more and more interested in it. In the opinion of one of the interviewees of WUR's Safety and Environment Department, now is the time to improve and change certain practices. Wageningen University is seen as a frontrunner, and this gives a certain obligation to do something. Therefore, it would be good if WUR could be a frontrunner in sustainable events as well.

In Wageningen, it depends per event organizer whether sustainability issues are high on the agenda. Some organizers are motivated but are not yet actively working on implementing sustainable practices. According to one of the interviewees, most people in Wageningen are interested in how to organize their event as sustainable as possible. However, this interviewee did not do anything special to make the event more sustainable. During the interview, the event organizer discovered that the event is already quite sustainable, but that they do not communicate this because they never thought about it.

The interviewee of Impulse is motivated to provide a more sustainable organization, but at the moment she does not know how to do this. The reason for this is because she does not see room for improvement and a part of the events in Impulse are organized entirely outside of her attention. However, she is very open to it and would love to work with Green Office Wageningen.

For the Open Days, sustainability is not a main focus, even though they are aware of its importance. It was mentioned that the Open Days take the waste part consciously into consideration because it is, for example, painful to see that there are many brochures left and they are all thrown away.

Also, at Wageningen Academy, sustainability is not a separate element while organizing the courses. However, the interview gave the interviewee already some new insights in terms of organizing events in a more sustainable way. They think that at the moment it is more fine-tuning to improve the sustainability of their courses even more. However, they mentioned that they could steer people in a particular direction with information related to transport, but they are not sure if they will do this in the future.

In comparison to the organizers mentioned before, some other event organizers are already putting much effort in implementing sustainable practices. An event that is a frontrunner in terms of sustainability is the AID. It is not their main focus, but they are consciously taking steps to be sustainable, mentioned the waste manager of WUR. They already implemented many sustainable practices but strive to increase this number.

For 100 years WUR, sustainability was also one of their main goals. They had a conversation with many parties to find the best solution for the pavilion that was located at the campus during their event. Besides, they had also many conversations to make the rest of the elements as sustainable as possible. In addition, they have been in contact with someone who knows much about events and sustainability.

In 2017, the event of ELLS was organized by the University of Copenhagen, and they got a lot of complaints related to the lack of sustainable initiatives. Therefore, the organization wanted to make the sustainable practices at the event more visible when they organized the event in Wageningen this year. It was mentioned that since the staff was older, they were less concerned about sustainability than the students. Thus, the organization of ELLS was very motivated to show to the students that their event was sustainable but less motivated to show this to the staff. Despite putting sustainability high on the agenda, there were still some complaints. However, in general, the attendees appreciated the sustainability of the event. For example, the attendees appreciated that there was an event app and only a few posters were printed.

Cornet was found to be also very motivated to implement sustainable practices. The employees of Cornet are very open-minded to join project groups and research on sustainability and want to explain what they are doing and give advice. The organization tries to work with new ideas, looks for sustainable alternatives and connects with the needs of people.

How event organizers think they can be motivated

Many event organizers stated during the interviews that sustainability is a new subject for them. For the Open Days, help would be needed because the organization does not have much knowledge in the field of sustainability. For Impulse, this is the same. The interviewee of Impulse stated that sustainability is new for her and that she never thought of it before. Moreover, the interviewee stated to find it difficult because at the moment she does not have such a good idea of how she could organize the events at Impulse more sustainably. To conclude, to motivate event organizers, they need to be provided knowledge on how they can improve sustainability at their event.

What many event organizers would help to create more motivation related to sustainability is to share knowledge, ideas, examples and success stories. In the interview with one of the organizers of the AID it was found that event organizers could benefit from sharing best practices if they are new or less experienced and if there is a personal incentive to go for it. Also, for Impulse sharing best practices would be a good idea, as they do not know what could be improved in terms of sustainability. Creating awareness related to sustainability is essential. The ELLS have had a sustainability meeting with the Green Office Wageningen, and that helped. Even so, it was mentioned that it maybe would be good to get the GOW more involved. For example, one interviewee never heard of them before. The interviewee of WURtalks mentioned this as well, that there is a possibility to go to GOW to discuss possibilities, but many people do not know about it and will not go there. The interviewee of ELLS mentioned that it would be good to offer a talk to staff.

As mentioned above, it would help many event organizers to receive an advice on sustainable practices. However, some organizers are already received sustainable advice. The AID has an advisory board of previous board members and besides a green advisory board. They motivate and advice the current AID board. Also, the students of Wageningen University are a kind of advisory board. It was found that Cornet employees speak to many students and they often have suggestions that they can implement. The interviewee of WUR's Safety and Environment Department mentioned this as well, the student council brings issues up, and this gives a trigger to improve.

In general, Wageningen University is partly motivated by the university ranking for sustainability. For this reason, the University is doing its best to be as sustainable as possible. The event organizers are confronted with this because this sustainable ambiance can be found on the whole campus. This general sustainable way of thinking provides motivation for event organizers. However, it would help the event organizers if there will come more guidance from the University by creating sustainability guidelines. One interviewee mentioned that the WUR has to put forward goals that event organizers have to meet. Furthermore, it would help if the University stated what aspects the University wants to focus on that year. Until now there are no guidelines at all, as is also recognized by the interviewees.

Theories on the motivation of stakeholders

Kelman's Social Influence Theory

An individual's attitudes, beliefs and therefore behavior are influenced by the interactions one has with others. There are three different processes by which the individual accepts social influence, namely compliance, identification, and internalization (Kelman, 1958). Weitzner and Deutch (2015), applied the three processes of social influence to stakeholder motivation.

Compliance occurs when an individual accepts influence to achieve a favorable reaction from another person or a group. The individual adopts the induced behavior not because he believes in its content but hopes to gain certain rewards or approval and to avoid punishments or disapproval. Therefore, the satisfaction derived from compliance is due to the social effect of accepting influence (Kelman, 1958). Weitzner and Deutsch (2015) explain compliance as instrumental motivation. In the case of instrumental motivation, a decision maker seeks to obtain a certain reward or avoid punishment. Green Office Wageningen can apply this by motivating the event organizers by emphasizing the benefits of sustainable changes or even punishing event organizers if they do not implement certain changes.

Identification occurs when an individual accepts influence in order to establish or maintain a desired and beneficial relationship to another person or a group. Therefore, the satisfaction derived from identification is due to the act of conforming (Kelman, 1958). Weitzner and Deutsch (2015) explain identification as a relational motivation. In the case of relational motivation, a decision maker seeks to establish or maintain a satisfying relationship with another based on either reciprocity or modeling. GOW can apply this by being a role model in terms of sustainability or by keeping warm relations with the event organizers, so they are more likely to give something in return; making sustainable changes.

Internalization occurs when an individual accepts influence because he perceives the content of the induced behavior to be rewarding, in which the content are the ideas and actions of the behavior. It can also be that individuals adopt the behavior because they realize it is congruent with their value system. Therefore, the satisfaction derived from internalization is due to the content of the behavior (Kelman, 1958). Weitzer and Deutsch (2015) explain internalization as a moral motivation. In the case of moral motivation, a decision maker seeks to ensure that his actions and beliefs are consistent with their value system. GOW can apply this by discovering the event organizers' values in terms of sustainability. If the event organizers value sustainability, they could be persuaded more easily to align their values with their actions. These three motivations are not mutually exclusive but can be present in an individual at all times to some extent, depending on the situation (Kelman, 2006).

Self-determination theory

Intrinsic and extrinsic motivation are two forms of motivation (see figure 2). Like many other authors, Gagne and Deci (2005) have come up with definitions for intrinsic and extrinsic motivation. According to Gagne and Deci (2005), intrinsic motivation is found in activities and people derive spontaneous satisfaction from the activity itself. For example, a personal desire to overcome a challenge, to produce high-quality work, or to interact with people that are liked and trusted. Locke and Schattke (2018)

defined intrinsic motivation as inside the entity or object. Deci and Ryan (2000) indicate that it is normal that people do not always have intrinsic motivation for individual goals. Extrinsic motivation, as defined by Gagne and Deci (2005) is when external factors are used to encourage people to do what has to be done. The satisfaction comes not from the activity itself but rather from the extrinsic consequences to which the activity leads. For example, someone promised a bonus or performance reward, and as a result, people start working harder. The shorter definition of Locke and Schattke (2018) is that extrinsic motivation means outside the entity or object.

Although humans are always interacting with their environment, often motivational factors consist of both internal and external aspects. Ryan and Connell (1989) stated that all forms of extrinsic motivation and intrinsic motivation are involved in different types of behaviors.

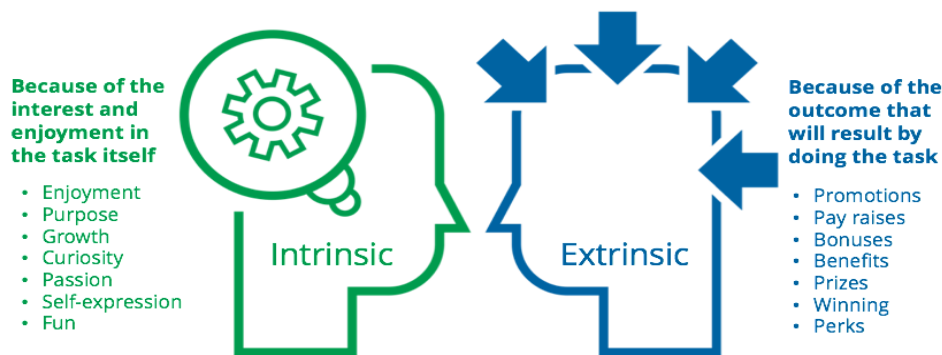


Figure 2: The power of intrinsic motivation of Hamill & Best (2016)

Valcke (2018) stated that the theoretical foundation of this approach could be found in the self-determination theory (SDT) of Ryan & Deci (2000). They distinguish different types of motivations based on the degree to which they have been internalized. Internalization refers to transforming an extrinsic motive into a personally endorsed behavior. Self-determination, therefore, stands for intrinsic motivation.

Gagne and Deci (2005) created the self-determination continuum which shows the continuum from amotivation to intrinsic motivation (see figure 3). All parts of this theory, so amotivation, extrinsic motivation, and intrinsic motivation are related to an activity or sets of activities by a person. Amotivation means not having an intention to act. Motivation involves intentionality and can either be autonomous motivated or controlled motivated.

An essential part of SDT is this distinction between autonomous motivation and controlled motivation. Autonomous motivation occurs when an individual has a choice (Schmid & Adams, 2008). Gagne and Deci (2005) explain that autonomous motivation includes intrinsic motivation because it is related to being motivated by one's interest in an activity. On the other hand, controlled motivation consists of extrinsic motivation and implies that the person has to engage in action due to some outside influence (Schmid & Adams, 2008). Gagne and Deci (2005) explain that it includes extrinsic motivation because it reflects the degree to which one feels forced by external counterparts.

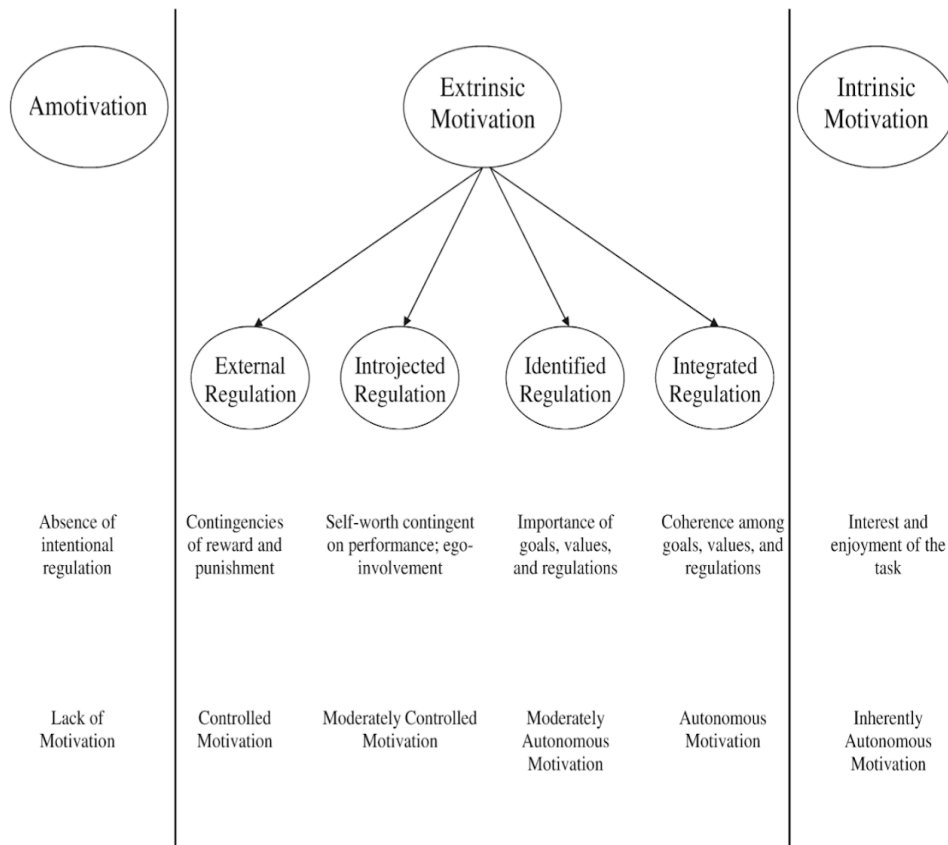


Figure 3: The self-determination continuum of Gagne and Deci (2005, p. 336)

Translating the self-determination theory to Green Office Wageningen, GOW has to stimulate event organizers from amotivation to motivation for organizing their event in a more sustainable way. When the event organizers are not intrinsically motivated, GOW can play a role in externally motivating the event organizers. Extrinsic motivation has to be stimulated to reach the goal of a sustainable motivation and develop this to intrinsic motivation. GOW could trigger the extrinsic motivation by external factors, like for example a sustainability reward. Hopefully, the intrinsic motivation of event organizers will then also be subconsciously activated: as organizers are busy with sustainable events, they might become interested in the subject of sustainability. The final goal of GOW would be that every event organizer will have the intrinsic motivation to organize their event as sustainable as possible.

Methods for motivating stakeholders

Apart from the theories on motivation of stakeholders, also a more practical advice including methods to motivate stakeholders is provided. Within this section, several methods to motivate stakeholders are explained and then applied on motivating event organizers. First a motivation model is discussed, followed by a discussion of four important methods to motivate stakeholders.

Goal-setting

A first method for motivating stakeholders is goal-setting. Goal-setting is about establishing standards for performance (Perry & Porter, 1982). It is important that clear directions are set and that the stakeholders have to stick to those directions (Rampton, 2018). To set clear directions, it is of importance to establish goals that are SMART formulated. SMART goals are: specific, measurable, acceptable, realistic, and timely (McNamara, n.d.). It is important to formulate the goals in a SMART way because it provides clarity and focus which you need to achieve the goals. Moreover, it helps

improving the actual reaching of the goals due to the focused goals and the dates that are set (Mindtools Content Team, n.d.). Apart from SMART, it is important to set reasonable expectations (Daum, 2015).

For Green Office Wageningen this would mean that for example the goals on the checklist need to be very clear and SMART formulated. In this way, event organizers know what is expected from them and it is clear what they can do to achieve the goal of having more sustainable events. Moreover, also the overall goal of having more sustainable events at WUR should be SMART formulated.

Reward

The second method is rewarding. It is important to reward the stakeholders when they have achieved some goals (Daum, 2015). Moreover, it can motivate to share the customers opinion with the stakeholders (McNamara, n.d.). Apart from rewarding, it is also about celebration of the achieved goals.

For GOW this motivation method could for example result in rewarding event organizers when they have managed to organize an event in a sustainable way. Moreover, if there would be several events that are organized in a more sustainable way, GOW could have a celebration with the organizers.

Feedback

Another frequently used method is about delivering frequent feedback. It is important to provide feedback on a frequent occasion (Rampton, 2018). Moreover, it is of importance to be specific when giving feedback (Daum, 2015). Feedback can entail telling the stakeholder that they are doing a good job which can motivate, but it also helps to intervene on time (Intermediar, n.d.). When giving feedback, it is important to focus on the situation and not on the person, also it is important to comment on actionable things, and give recommendations on how to improve. Lastly it is important to not make assumptions (Chua, n.d.)

For GOW this method could result in meetings with the event organizers that use the checklist to see how they are doing in organizing sustainable events. As stated in the description of this method, it would be the best if GOW has several feedback sessions with every event organizer.

Communication

Several other methods that help to motivate are linked to communication. Examples of those methods are conveying how the results contribute to the organizational results, or the communication of the higher vision (McNamara, n.d., Daum, 2015). Moreover, it is important to support new ideas that come up by the stakeholders themselves (Daum, 2015). Diversification of the communication plan is also a method to motivate others and finally it is important to keep the communications positive (Rampton, 2018).

For GOW, this method could lead to communicating about the higher vision to all event organizers, for example by mentioning the vision on the checklist. Furthermore, on the checklist it could be noted what the impact would be for WUR if all event organizers would implement the sustainable practices on the checklist.

Chapter 6 - Conclusion and recommendations

In this chapter, the results from the previous chapters are integrated. At first, a summary is provided based on all chapters. Thereafter, recommendations based on the results of the previous chapters are provided to Green Office Wageningen (GOW).

Summary and conclusion

This research has been conducted to provide an answer to the question; *In what way can events at Wageningen University & Research be organized more sustainably?* To answer the main question, a literature study, a content analysis and stakeholder interviews were carried out.

Firstly, the most important aspects affecting the sustainability of events were identified from the literature. The most important aspects found in the literature were location and venue, accommodation, transportation, catering, communication and event material, waste, and energy. Many studies referred to transportation as having the highest environmental impact of an event as the emission resulting from the combustion of fossil fuels of cars as well as planes contribute highly to climate change. Based on the aspects' environmental impact and which aspects were applicable to WUR, the aspects of transportation, catering, communication and event materials, waste, and energy, were selected to focus on during the remainder of the project.

Secondly, best practices were found through the comparison of existing checklists for organizing sustainable events. Best practices related to transportation mainly aim at encouraging participants, staff members and speakers to reduce the use of cars and airplanes but to walk, use bikes, public transportation or carpooling instead. Catering best practices aimed at serving local and seasonal food to reduce transport and cooling storage, serving organic food to reduce pesticides, and serving vegetarian and vegan food due to these options having a low environmental impact. Best practices related to communication and event materials focused on the reduction of the amount of materials used as well as on reusing, donating and recycling where possible. The main best practices focused on going paperless and on avoiding disposables to save resources. Waste best practices aimed at providing separate bins, making it clear how to separate, and donating leftover food. Waste separation reduces pollution from landfills and combustion of waste and saves resources and energy. Energy best practices aimed at reducing energy use by using energy efficient equipment, unplugging unused devices and turning off light when not needed. Furthermore, cooling and heating can be reduced. Lastly, it was recommended to raise awareness about the sustainability of the event prior, during and post event.

Thirdly, sustainable practices at events at WUR were found in interviews with event organizers and facility staff. Several best practices were found. Best practices for catering were making sure that the number of attendees was correct and offering lunch in batches. Regarding transportation, the best practices entailed offering bikes to attendees and increasing the number of busses between the train station and the campus. The best practices found relating to waste were the reducing the packaging of food and limiting the type of materials used at the events in order to improve waste separation. Communication and event material best practices included the use of online communication, as well as giving away Doppet bottles to attendees.

Furthermore, several opportunities were identified for event organizers to improve on sustainability. These related to communicating the sustainability to the attendees, reducing waste and transportation. In addition, benefits and constraints were found for improving the sustainability of the event. A main benefit is that, in some cases, measures to improve sustainability also reduce costs. Constraints relate to a lack of knowledge and lack of budget regarding sustainability. Specific for tableware, a constraint

is that proper disposal of biodegradables is not possible at WUR. For transportation, the main constraint is the lack of a train station in the city of Wageningen.

Lastly, it was found how motivated event organizers are to improve sustainability at this moment and how they could be motivated even more. It was found in the interviews that most event organizers were motivated to improve the sustainability of the event. However, it did differ per event how much sustainable practices were already implemented, meaning there is room for improvement. It was mentioned that the organizers need more knowledge on how they can improve. It would help event organizers if they shared best knowledge, ideas and best practices, and if they received an advice on sustainable practices. In the literature study, it was found that one of the ways to motivate event organizers is to emphasize the benefits of sustainable changes. Another way to motivate event organizers is by having a role model in terms of sustainability. A third way was through rewards, for example by having a sustainability reward for event organizers that do well. Other methods are meeting with event organizers to provide feedback on how they are organizing the events in a sustainable way and setting up sustainability goals which are specific, measurable, acceptable, realistic, and timely.

To conclude, the methods used for this scientific report identified many ways to improve the sustainability of events at WUR. Apart from that, the impact of these improvements was studied. On basis of these results, a checklist is developed to help organizers implement sustainability at their events.

Recommendations

The results of this study are translated into the checklist that can be found in appendix 7. Within this section, a distinction is made between three different types of recommendations: 1) recommendations that GOW needs to lobby for within WUR, 2) recommendations on how to motivate stakeholders and 3) recommendations on how to further develop the checklist.

Recommendations that GOW needs to lobby for within WUR

In this section, general recommendations are provided that are needed to facilitate some of the recommendations made in the checklist. Some of the points that are included in the checklist require changes that fall outside the scope of what event organizers can achieve and thus need to be made higher up in the chain of command within the University. Because of their role within WUR, GOW is the perfect candidate to lobby for the consideration and implementation of these changes.

One of the most essential recommendations that results from this study is related to the development of a specific and detailed policy on sustainable event management within WUR. In general, WUR is one of the world's leading universities when it comes to sustainability. Nevertheless, clear university-wide policies, regulations and guidelines on how to organize sustainable events are lacking. A well-developed sustainable event management policy could be a strong signal towards event organizers: it demonstrates the importance of considering sustainability when organizing events and provides all involved parties with a framework that can be used to further develop sustainable event practices. Based on this study, GOW could take concrete actions that will ensure that such a policy is developed sooner rather than later.

As explained, another general limitation that came up during several of the interviews was the event organizer's lack of knowledge when it comes to sustainable event management. Whilst the development of the checklist (and potentially a university-wide policy) is an excellent first step in the right direction, GOW could take additional actions to increase overall awareness and knowledge. As some of the organizers were not aware of the existence of GOW, a first action point could be to raise awareness about the function of GOW among event organizers and to highlight how working with GOW can be

beneficial for the sustainability and overall quality of events at WUR. Focusing on the effective transfer and sharing of available knowledge is of vital importance. A practical way to organize this would be to facilitate meetings, information sessions or other opportunities for dialogue between stakeholders and GOW.

Some of the recommendations relate to specific best practices that are included in the checklist. In order to facilitate the organization of a mostly or entirely paperless event, one recommendation would be to develop a general event app or online platform containing all the elements that would normally need to be printed. Examples of such elements include attendee registration passes, registration lists, general event information, floor plans and speaker notes. By providing event organizers with a simple and ready-to-go online application that can easily be customized, important steps can be made towards organizing paperless events. GOW can play an important role in convincing the appropriate departments within the University of the importance of the development of such a tool. In addition, GOW could organize focus groups with some of WUR's key event organizers to determine what should be included in this tool, both in terms of content and design.

A recurring best practice relates to the overall reuse of event materials. Whilst this is an interesting idea in theory, a practical advice on how to arrange this was not readily available in the literature nor in existing checklists and guidelines. Therefore, the following practical recommendation emerged during one of the team's brainstorm sessions: in one of the WUR buildings, a centralized event materials office could be established in which both unused and reusable materials, such as name badges, decorations and furniture, can be stored once an event has ended. Sharing resources among event organizers has the potential to reduce waste as well as costs and can thus play a valuable part in making events at WUR more sustainable. Of course, promotional activities will be needed to inform current and future organizers about the existence of the office. GOW could take an active role in the development and management of this shared office.

Another reappearing best practice suggests that if disposable catering items are needed, they should at least be made from biodegradable materials, as this will reduce the amount of landfill that results from using foam, plastic or polystyrene disposables. Before implementing the use of biodegradable disposables, it is recommended to arrange appropriate waste facilities (e.g. bins) for the correct disposal of biodegradables. Using the findings in this report, GOW can contact the responsible department to request the arrangement of these waste facilities.

A final, general recommendation is related to the reduction of food waste. GOW could develop a so-called 'food scavengers' system in which interested people (students, WUR employees or Wageningen residents) will be alerted if food is left over after an event is finished. By becoming part of a Facebook group, WhatsApp group or other online platform, people will receive a notification containing information about the type and quantity of food that is available and where it can be picked up. Of course, prepared food is subject to certain health and safety regulations. These should be reviewed in detail prior to implementing this food pick-up system.

Recommendations on how to stimulate stakeholders

In this section, specific recommendations are provided on how stakeholders can be motivated to improve the sustainability of their event. Within the recommendations, result from the stakeholder interviews as well as the stakeholder motivation literature are combined.

When motivating stakeholders, one recommendation could be to continuously emphasize the benefits of organizing sustainable events to stakeholders. Doing so will ensure that sustainability remains top-of-mind and that stakeholder become aware of the various advantages of sustainable event management, such as saving costs, time and reducing or offsetting negative environmental impacts.

In addition, GOW could develop a reward system in which events that do well in terms of sustainability are recognized and rewarded for their efforts, thus triggering the extrinsic motivation of stakeholders. Several of the existing checklists have implemented similar reward systems. Often, certain amounts of points are attached to all of the action points within the checklist. By adding up the total score for all the action points that have been implemented by the event organizer, the sustainability score of the event can be assessed and a reward or certification can be provided to the organizer. GOW could extend the currently developed checklist and add a similar reward or sustainability certification system. Furthermore, GOW is recommended to organize feedback sessions in which current sustainable practices are reviewed and new sustainable goals are developed using the SMART method. Within this method, goals are made specific, measurable, acceptable, realistic, and timely.

Recommendations on how to further develop the checklist

In this final section, recommendations are provided on how the checklist that was provided could be further developed.

Firstly, we recommend digitalizing the checklist. This can either be an app or a website. A digital checklist has several advantages. Firstly, a digital checklist is more sustainable than a printed checklist. Secondly, a digital checklist is easy to keep up to date. In the interviews it was stated that it is important to have a checklist that is up to date. Furthermore, a digital checklist is easy to find and use for event organizers.

We also recommend using an interactive format for the checklist. The current checklist is a PDF file. This can be uploaded online, but the boxes cannot be checked. We would recommend having an interactive format in which boxes can be checked and in which you can click on titles to move to the right section. Furthermore, we would recommend implementing incentives for event organizers to be more sustainable, so to check all boxes on the checklist. This can be implemented with a green bar that grows when you click more boxes and/or with a simulation of for instance confetti when you checked all boxes. Lastly, there is now a box with information for each aspect on how to improve visibility. If the checklist is digitalized, this could be replaced by a button on which you can click for the information. Especially since the visibility of sustainability measures was perceived as a challenge by event organizers, the creation of a special button for this purpose is useful.

References

A

Arcodia, C., & Cohen, S. (2007). Environmental accreditation for the event sector. *Proceedings UNWTO Ulysses Conference: Knowledge-based development through tourism*, 72-78.

B

Bajpai, P. (2013). *Recycling and Deinking of Recovered Paper*. Elsevier Science Publishing.

Baroni, L., Cenci, L., Tettamanti, M., & Berati, M. (2007). Evaluating the environmental impact of various dietary patterns combined with different food production systems. *European Journal of Clinical Nutrition*, 61, 279-286.

Beirão, G., & Cabral, S. J. A. (2007). Understanding attitudes towards public transport and private car: A qualitative study. *Transport Policy*, 14(6), 478-489.

Bengtsson, J., Ahnström, J., & Weibull, A. (2005). The effects of organic agriculture on biodiversity and abundance: a meta-analysis. *Journal of Applied Ecology*, 42, 261-269.

Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological methods & research*, 10(2), 141-163.

Billboard Ecology. (n.d.). Retrieved from <http://www.billboardecology.com/index.cfm>

Boer, I. J. M. de, Cederberg, C., Eady, S., Gollnow, S., Kristensen, T., Macleod, M., Meul, M., Nemecek, T., Phong, L. T., Thoma, G., van der Werf, H. M. G., Williams, A. G., & Zonderland-Thomassen, M. A. (2011). Greenhouse gas mitigation in animal production: towards an integrated life cycle sustainability assessment. *Current Opinion in Environmental Sustainability*, 3(5), 423-431.

Bruns-Smith, A., Choy, V., Chong, H., & Verma, R. (2015). Environmental sustainability in the hospitality industry: Best practices, guest participation, and customer satisfaction. *Cornell Hospitality Report*, 15(3), 6-16.

Bryman, A., & Bell, E. (2015). *Business research methods*. Oxford, USA: Oxford University Press.

C

Carrington, D. (2018, May 31). Avoiding meat and dairy is 'single biggest way' to reduce your impact on Earth. *The Guardian*. Retrieved from <https://www.theguardian.com/environment/2018/may/31/avoiding-meat-and-dairy-is-single-biggest-way-to-reduce-your-impact-on-earth>

Chester, M. (2008). Life-cycle Environmental Inventory of Passenger Transportation in the United States. *Institute of Transportation Studies, Berkeley [Dissertation]*. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.152.7885&rep=rep1&type=pdf>

Chester M. & Horvath A. (2008). Environmental Life-cycle Assessment of Passenger Transportation: A Detailed Methodology for Energy, Greenhouse Gas and Criteria Pollutant Inventories of Automobiles, Buses, Light Rail, Heavy Rail and Air. *Institute of Transportation Studies, Berkeley [working paper #UCB-ITS-VWP-2008-2]*. Retrieved from <https://escholarship.org/uc/item/5670921q>

Chua, C. (n.d.). *How to Give Constructive Criticism: 6 Helpful Tips*. Retrieved from: <https://personalexcellence.co/blog/constructive-criticism/>

Coachella. (n.d.). *Carpoolchella*. Retrieved from <https://www.coachella.com/carpoolchella/>

Collins, A. & Cooper, C. (2016). Measuring and managing the environmental impact of festivals: the contribution of the Ecological Footprint. *Journal of Sustainable Tourism*, 25(1), 148-162.

Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options?. *Tourism management*, 30(6), 828-837.

D

Daum, K. (2015, October 26). *17 ways great leaders motivate their people*. Retrieved from: <https://www.inc.com/kevin-daum/17-ways-great-leaders-motivate-their-people.html>

D'Alessandro, N. (2014). 22 Facts About Plastic Pollution (And 10 Things We Can Do About It). *EcoWatch*. Retrieved from <https://www.ecowatch.com/22-facts-about-plastic-pollution-and-10-things-we-can-do-about-it-1881885971.html>

Dickson, C., & Arcodia, C. (2010a). Environmentally sustainable events: a critical review of the literature. *Global Events Congress IV: Festivals & Events Research: State of the Art, Leeds Metropolitan University*, 14, 16-34.

Dickson, C., & Arcodia, C. (2010b). Promoting sustainable event practice: The role of professional associations. *International Journal of Hospitality Management*, 29(2), 236-244.

Dinu, M., Abbate, R., Gensini, G. F., Casini, A., & Sofi, F. (2017). Vegetarian, vegan diets and multiple health outcomes: A systematic review with meta-analysis of observational studies. *Critical Reviews in Food Science and Nutrition*, 57(17), 3640-3649.

Di Stefano, J. (2000). Energy efficiency and the environment: the potential for energy efficient lighting to save energy and reduce carbon dioxide emissions at Melbourne University, Australia. *Energy*, 25(9), 823-839.

Dowdey, S. (n.d.). How Carbon Offsets Work. *How Stuff Works*. Retrieved from <https://science.howstuffworks.com/environmental/green-science/carbon-offset.htm>

E

Ellul, A. (1995). Pollution: legal means for the control of waste and sewage. In Council of Europe (Ed.), *Sustainable tourism development* (pp. 89-98). Strasbourg Cedex, Germany: Council of Europe publishing.

Energie Beheer Nederland (EBN). (2016). *The Dutch Energy System At A Glance*. Retrieved from <https://www.ebn.nl/en/knowledge-partner-dutch-oil-and-gas/>

Engelhaupt, E. (2008). Would You Like That Book in Paper or Plastic? *Environmental Science & Technology*, 42(12), 4242-4245.

Eureka Recycling. (2008). *Recycling, Composting and Greenhouse Gas Reductions in Minnesota*. Retrieved from http://makedirtnotwaste.org/sites/default/files/composting_factsheet_0.pdf

European Environmental Agency (EEA). (2014). *Waste: a problem or a resource?* Retrieved from <https://www.eea.europa.eu/signals/signals-2014/articles/waste-a-problem-or-a-resource>

European Parliament. (2015). *Understanding Energy Efficiency*. Retrieved from [http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/568361/EPRS_BRI\(2015\)568361_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/568361/EPRS_BRI(2015)568361_EN.pdf)

F

Fédération Equestre Internationale. (2014). *Sustainability handbook for event organizers*. Retrieved from https://inside.fei.org/system/files/FEI_Sustainability_Handbook_for_Event_Organisers.pdf

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany. (n.d.). *'Public Transport First' Strategy*. Retrieved from <http://transferproject.org/wp-content/uploads/2014/05/A.-High-Quality-Public-Transport.pdf>

Food and Agriculture Organization of the United Nations (FAO). (2002). Organic agriculture, environment and food security. *Environment and Natural Resources Series, No. 4*.

Fox, N., and Ward, K. (2008). Health, ethics and environment: A qualitative study of vegetarian motivations. *Appetite, 50*(2-3), 422-429.

G

Gagné, M., & Deci, E. (2005). Self-determination theory and work motivation. *Journal Of Organizational Behavior, 26*(4), 331-362.

Gavrilescu, D. & Puitel, A. & Dutuc, G. & Craciun, G. (2012). Environmental impact of pulp and paper mills. *Environmental Engineering and Management Journal, 11*(1), 81-85.

Geisel, P., & Seaver, D. (2009). Composting is good for you and the environment. University of California. *Division of Agriculture and Natural Resources, Publication 8367*. Retrieved from <https://anrcatalog.ucanr.edu/pdf/8367.pdf>

Gisborne District Council. (2009). *Benefits of walking and cycling*. Retrieved from <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&cad=rja&uact=8&ved=2ahUKEwie0-aozYvAhVGnRoKHRDCA-oQFjAEegQICBAC&url=http%3A%2F%2Fwww.gdc.govt.nz%2Fassets%2FStrategies%2FWalking-and-Cycling%2F11%2520Benefits%2520of%2520Walking%2520and%2520Cycling.pdf&usq=AOvVaw3kZfGB-0AmAYcjO6xC0L7p>

Glastonbury Festival. (n.d.). *Our green policies*. Retrieved from <https://www.glastonburyfestivals.co.uk/information/green-glastonbury/our-green-policies/>

Green Events. (2013). *Wat kun jij doen?* Retrieved from <http://greenevents.nl/wat-kun-jij-doen/>

H

Hamill, L., & Best, T. (2016). *The power of intrinsic motivation*. Retrieved from <https://www.limeade.com/2017/10/watch-webinar-on-demand-the-power-of-intrinsic-motivation/>

Harrell, M. C., & Bradley M. A. (2009). Data Collection Methods: Semi-Structured Interviews and Focus Groups. *National Defense Research Institute*.

Henderson, P. (2018). *Ecological effects of electricity generation, storage and use*. UK: CABI Publishing.

I

Intermediar (n.d.). *Motiveren van medewerkers: 5 do's en don'ts*. Retrieved from <https://www.intermediar.nl/persoonlijke-groei/leidinggeven/motiveren-van-medewerkers-5-do-s-en-don-ts>

International Energy Agency (IEA). (2017, June 6). *Tracking Clean Energy Progress 2017*. Retrieved from <https://www.iea.org/publications/freepublications/publication/TrackingCleanEnergyProgress2017.pdf>

International Organization for Standardization (ISO). (2009). *ISO 14064-1:2006*. Retrieved from <https://www.iso.org/standard/38381.html>

International Organization for Standardization (ISO). (2012). *ISO 20121 Sustainable events*. Retrieved from <https://www.iso.org/iso-20121-sustainable-events.html>

J

Jackson, A., Boswell, K. & Davis, D. (2011). Sustainability and Triple Bottom Line Reporting – What is it all about? *International Journal of Business, Humanities and Technology*, 1(3), 55-59.

Jardine, C. N. (2005). Calculating the Environmental Impact of Aviation Emissions. *Environmental Change Institute*. Retrieved from <https://pdfs.semanticscholar.org/a7ca/b5c52d7c41b40600697b2e158f126fd6fb4c.pdf>

Jones, M. (2014). *Sustainable Event Management: A Practical Guide*. UK: Routledge.

K

Kelman, H. C. (1958). Compliance, identification, and internalization: Three processes of attitude change. *Journal of Conflict Resolution*, 2(1), 51–60.

Kelman, H. C. (2006). Interests, relationships, identities: Three central issues for individuals and groups in negotiating their social environment. *Annual Review of Psychology*, 57, 1–26.

Kim, R., & Pierce, B. (2018). Carbon Offsets: An Overview for Scientific Societies. Retrieved from <http://www.cis.upenn.edu/~bcpierce/papers/carbon-offsets.pdf>

Kotler, P. (2011). Reinventing Marketing to Manage the Environmental Imperative. *Journal of Marketing*, 75, 132-136.

KS Environmental Group. (2015, March 26). *Environmental benefits of recycling*. Retrieved from <https://ksenvironmental.com.au/environmental-benefits-of-recycling/>

L

Laing, J., & Frost, W. (2010). How green was my festival: Exploring challenges and opportunities associated with staging green events. *International Journal Of Hospitality Management*, 29(2), 261-267.

Lansana, F. M. (1992). Distinguishing potential recyclers from nonrecyclers: a basis for developing recycling strategies. *Journal of Environmental Education*, 23(2), 16-23.

Léopold G. (n.d.). One Planet Events - Methodology and tools to green your events? *WWF International*. Retrieved from https://wwf.panda.org/get_involved/live_green/at_the_office/green_events/

Lin, Z. Y., Wang, X., Li, C. J., Gordon, M. P. R., & Harder, M. K. (2016). Visual Prompts or Volunteer Models: An Experiment in Recycling. *Sustainability*, 8(5), 458.

Locke, E., & Schattke, K. (2018). Intrinsic and extrinsic motivation: Time for expansion and clarification. *Motivation Science*.

Longhurst, R. (2016). Semi-structured Interviews and Focus Groups. In N. Clifford, N., S. French & G. Valentine (Eds.), *Key Methods in Geography* (Chapter 9). London, UK: Sage Publications Ltd.

M

Madden, N. (2009, December 8) *Sustainability Software, Part 2: Cutting the Paper Chase*. Retrieved from: <https://www.technewsworld.com/story/68834.html>

Mair, J., & Jago, L. (2010). The development of a conceptual model of greening in the business events tourism sector. *Journal of Sustainable Tourism*, 18(1), 77-94.

Marlow, H. J., Hayes, W. K., Soret, S., Carter, R. L., Schwab, E. R., & Sabaté, J. (2009). Diet and the environment: does what you eat matter? *The American Journal of Clinical Nutrition*, 89(5), 1699-1703.

Marrewijk, M., van (2003). Concepts and Definitions of CSR and Corporate Sustainability: Between Agency and Communion. *Journal of Business Ethics*, 44(2-3), 95-105.

McNamara, C. (n.d.) Steps You Can Take to Support the Motivation of Others. In: *Helping People to Motivate Themselves and Others*. Retrieved from: <https://managementhelp.org/leadingpeople/motivating-others.htm>

Miller, N., Meindl, J., & Caradine, M. (2016). The Effects of Bin Proximity and Visual Prompts on Recycling in a University Building. *Behavior and Social Issues*, 25, 4-10.

Milios, L., Davani, A., & Yu, Y. (2018). Sustainability Impact Assessment of Increased Plastic Recycling and Future Pathways of Plastic Waste Management in Sweden. *Recycling 2018*, 3(3), 33, 1-21.

Mindtools Content Team (n.d.). SMART Goals. How to make your goals achievable. Retrieved from: <https://www.mindtools.com/pages/article/smart-goals.htm>

Musgrave, J. & Raj, J. (2009). Introduction to a Conceptual Framework for Sustainable Events. *Event Management and Sustainability*, 1-12.

N

National Express Transit. (2018). Why is public transport good for the environment? *National Express Transit Blog*. Retrieved from <https://www.nationalexpresstransit.com/blog/why-is-public-transportation-good-for-environment>

National Academy of Engineering and National Research Council (NAENRC). (2010). *The Power of Renewables: Opportunities and Challenges for China and the United States*. Washington, DC: The National Academies Press.

National Geographic. (n.d.). *Deforestation*. Retrieved from: <https://www.nationalgeographic.com/environment/global-warming/deforestation/>

Newnam, J. (2011). Environmental Benefits of Public Transportation. *South University*. Retrieved from <https://www.southuniversity.edu/whoweare/newsroom/blog/environmental-benefits-of-public-transportation-31178>

O

Omega Center for Sustainable Living (OCSL). (2014). *Print or Digital: It All Has Environmental Impact*. Retrieved from <https://www.eomega.org/article/print-or-digital-it-all-has-environmental-impact>

Omer, A. M. (2009). Energy use and environmental impacts: A general review. *Journal of Renewable and Sustainable Energy*, 1(5), 053101.

Oort, N. van, Bijl, R. van der, & Verhoof, F. (2017). The wider benefits of high quality public transport for cities. *European Transport Conference in Barcelona, October 2017*. Retrieved from <https://nielsvanoort weblog.tudelft.nl/files/2017/09/Van-Oort-et-al-Wider-benefits-of-PT-5E-framework-ETC-proceedings2017.pdf>

P

Perry, J. L., & Porter, L. W. (1982). Factors affecting the context for motivation in public organizations. *Academy of management review*, 7(1), 89-98.

Palmer, D. (2008). Food charity launches calculator measuring environmental benefits of donating food. *Australian Food News*. Retrieved from <http://www.ausfoodnews.com.au/2008/11/28/food-charity-launches-calculator-measuring-environmental-benefits-of-donating-food.html>

Powell, M. K. (n.d.). How Going Paperless can Save the Environment. Retrieved from <https://www.survivalrenewableenergy.com/going-paperless-save-environment/>

Q

R

Ralston, L. (2018). The Influence Of Signage And Proximity Of Recycling Bins On The Volume Of Recycling Materials Generated At A Hotel. Retrieved from https://www.researchgate.net/publication/255573654_The_Influence_Of_Signage_And_Proximity_Of_Recycling_Bins_On_The_Volume_Of_Recycling_Materials_Generated_At_A_Hotel

Rampton, J. (2018, september 29). Communication techniques that motivate others to become better. Retrieved from: <https://www.inc.com/john-rampton/communication-techniques-that-motivate-others-to-become-better.html>

Recycling Waste. (n.d.). Retrieved from <http://feelfriendly.com/recycling-waste-importance-waste.html>

Resource Efficient Scotland. (2015). *How to Plan and Deliver Environmentally Sustainable Events*. Retrieved from https://www.resourceefficientscotland.com/sites/default/files/How%20to%20plan%20%26%20deliver%20environmentally%20sustainable%20events%20260315_0_0.pdf

Rich, S. R., Tomas, T. R., Canberg, A. S., and Smith, W. W. (2011). Measuring the Economic, Social and Environmental Impacts of Special Events A Mixed Methods Approach. *Travel and Tourism Research Association: Advancing Tourism Research Globally*, 59.

Rigby, D., and Cáceres, D. (2001). Organic farming and the sustainability of agricultural systems. *Agricultural Systems*, 68(1), 21-40.

Ryan, R., & Connell, J. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal Of Personality And Social Psychology*, 57(5), 749-761.

Ryan, R., & Deci, E. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78.

S

Safety and Environment Department of Wageningen University & Research (SED of WUR). (2015). 2015-2017 Multi-Year Environmental Plan. Retrieved from https://www.wur.nl/upload_mm/4/4/e/e0f3a68a-a427-472b-9b5b-f317f17a8261_EN%2020151005_vertEN_MJP2015_2017_v1.1_competent%20authority.pdf

Safety and Environment Department of Wageningen University & Research (SED of WUR). (2018). *Annual environmental report 2017*. Retrieved from https://www.wur.nl/upload_mm/7/5/0/93ca5264-9a83-4012-b458-77c8cdc0fa88_Annual_environmental_report_WUR_2017_v1.0.pdf

Slaper, T. F. (2011). The Triple Bottom Line: What Is It and How Does It Work? *Indiana Business Review*, 86(1), 4-8.

Schmid, B., & Adams, J. (2008). Motivation in Project Management: The Project Manager's Perspective. *Project Management Journal*, 39(2), 60-71.

Valcke, M. (2018). *Onderwijskunde als ontwerpwetenschap* (1st ed.). Gent, Belgium: Academia Press.

Science Guide. (2017). *Wageningen groenste van Nederland*. Retrieved from <https://www.scienceguide.nl/2017/01/wageningen-groenste-van-nederland/>

Sheehan, B. (2017). *Greenhouse Gas Impacts of Disposable vs Reusable Foodservice Products*. Retrieved from: https://www.cleanwateraction.org/sites/default/files/CA_ReTh_LitRvw_GHG_FINAL_0.pdf

Smith, M. M., & Aber, J. D. (2018). Energy recovery from commercial-scale composting as a novel waste management strategy. *Applied Energy*, 211(1), 194-199.

Solomon, K. R. (1996). Chlorine in the bleaching of pulp and paper. *Pure & Applied Chemistry*, 68(9), 1721-1730.

Sonnino, R., and McWilliam, S. (2011). Food waste, catering practices and public procurement: A case study of hospital food systems in Wales. *Food Policy*, 36(6), 823-829.

Steg, L. (2003). Can public transport compete with the private car? *IATSS Research*, 27(2), 27-35.

Stevenson, F. J. (1982). *Humus Chemistry: Genesis, Composition, Reactions*. New York. John Wiley & Sons.

Studenten voor Morgen. (2018). *Uitgelicht*. Retrieved from <https://www.studentenvoormorgen.nl/uitgelicht/>

Sumathi, S., & Hung, Y. T. (2006). Treatment of pulp and paper mill wastes. *Waste treatment in the process industries*, 453-497.

Swedish Environmental Protection Agency (SEPA). (2012). *Environmental impact from different modes of transport*. Retrieved from <https://www.naturvardsverket.se/Documents/publikationer/620-5183-0.pdf?pid=2861>

T

U

Union of Concerned Scientists (UCS). (n.d.). *Environmental Impacts of Renewable Energy Technologies*. Retrieved from: <https://www.ucsusa.org/clean-energy/renewable-energy/environmental-impacts>

Union of Concerned Scientists (UCS). (2016). *The Hidden Costs of Fossil Fuels*. Retrieved from <https://www.ucsusa.org/clean-energy/coal-and-other-fossil-fuels/hidden-cost-of-fossils>

United Nations Environmental Program (UNEP). (2009). *Green Meeting Guide*. Retrieved from <http://wedocs.unep.org/bitstream/handle/20.500.11822/7834/-Green%20Meeting%20Guide%202009%20Roll%20out%20the%20Green%20Carpet%20for%20you%20Participants-20094067.pdf?sequence=3&isAllowed=y>

United Nations Environmental Program (UNEP). (2012). *Sustainable Events Guide*. Retrieved from <https://www.greeningtheblue.org/sites/default/files/Sustainable%20Events%20Guide%20May%2030%202012%20FINAL.pdf>

U.S. Energy Information Administration (EIA). (2018). *Energy Efficiency and Conservation*. Retrieved from: https://www.eia.gov/energyexplained/index.php?page=about_energy_efficiency

U.S. Environmental Protection Agency (EPA). (2013). REPORT ON THE 2013 U.S. Environmental Protection Agency (EPA) International Decontamination Research and Development Conference. Retrieved from: https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=520120&Lab=NHSRC

U.S. Environmental Protection Agency (EPA). (2016). *Paper Recycling*. Retrieved from: <https://archive.epa.gov/wastes/conserve/materials/paper/web/html/index-2.html>

U. S. National Academy of Engineering and National Research Council (NAENRC). (2010). *Environmental Impacts of Renewable Electricity Generation*. Retrieved from: <https://www.nap.edu/read/12987/chapter/6>

V

Valcke, M. (2018). *Onderwijskunde als ontwerpwetenschap* (1st ed., pp. 519-520). Uitgeverij Acco C.V.

Vries, G. de, Terwel, B. W., Ellemers, N., & Daamen, D. D. (2015). Sustainability or profitability? How communicated motives for environmental policy affect public perceptions of corporate greenwashing. *Corporate Social Responsibility and Environmental Management*, 22(3), 142-154.

W

Wageningen University & Research. (2018). *Calendar Wageningen University & Research*. Retrieved from <https://www.wur.nl/en/Calendar-1.htm>

Wageningen University & Research. (n.d.-a). *Catering*. Retrieved from <https://www.wur.nl/en/show/Catering-2.htm>

Wageningen University & Research. (n.d.-b). *CO2 footprint*. Retrieved from <https://www.wur.nl/nl/show/CO2-footprint-3.htm>

Wageningen University & Research. (n.d.-c). *Energy*. Retrieved from <https://www.wur.nl/en/show/Energy-1.htm>

Wageningen University & Research. (n.d.-d). *Sustainability*. Retrieved from <https://www.wur.nl/en/About-Wageningen/Sustainability.htm>

Wageningen University & Research. (n.d.-e). *Green Office Wageningen*. Retrieved from <https://www.wur.nl/en/show/Green-Office-Wageningen-1.htm>

Wageningen University & Research. (n.d.-f). *Mobility*. Retrieved from <https://www.wur.nl/nl/show/Mobility.htm>

Wageningen University & Research. (n.d.-g). *Procurement*. Retrieved from <https://www.wur.nl/en/show/Procurement.htm>

Wageningen University & Research. (n.d.-h). *The Green Man*. Retrieved from <https://www.wur.nl/en/show/The-Green-Man-1.htm>

Wageningen University & Research. (n.d.-i). *Waste*. Retrieved from <https://www.wur.nl/nl/show/Waste.htm>

Wageningen University & Research. (n.d.-j). *Waste policy & implementation*. Retrieved from https://www.wur.nl/upload_mm/d/6/0/4bfd080d-8c83-4df6-990e-d6e917993953_20140325_Afvalbeleid_Wageningen_UR_versie1_engels_intranet.pdf

Wahlen, S., Heiskanen, E., and Aalto, K. (2012). Endorsing Sustainable Food Consumption: Prospects from Public Catering. *Journal of Consumer Policy*, 35(1), 7-21.

Weitzner, D., & Deutsch, Y. (2015). Understanding Motivation and Social Influence in Stakeholder Prioritization. *Organization Studies*, 36(10), 1337–1360.

Wondyfraw M. (2014). Mechanisms and Effects of Acid Rain on Environment. *Journal of Earth Science & Climatic Change* 5(6), 204.

Woods, L., & Bakshi, B. R. (2014). Reusable vs. disposable cups revisited: guidance in life cycle comparisons addressing scenario, model, and parameter uncertainties for the US consumer. *The International Journal of Life Cycle Assessment*, 19(4), 931-940.

World Wildlife Fund. (n.d.). *Deforestation*. Retrieved from <https://www.worldwildlife.org/threats/deforestation>

X

Y

Yale School of Forestry & Environmental Studies. (n.d.). *Logging*. Retrieved from <https://globalforestatlas.yale.edu/forest-use-logging/logging>

Z

Appendices

Appendix 1 - Interview guideline event organizers

The 'topics to consider' include topics that were thought of before to address in case there were no clear answers from the interviewees.

1. Explanation of the project and introduction of ourselves.
2. Introduction of the interviewee and the event itself. How many attendees are there at the event?
3. Questions:
 - a) How sustainable is your event?
 - b) Do you have a budget on sustainability?
 - c) Is there someone in your organization team specifically dealing with sustainability?
 - d) Did you implement any changes to increase the sustainability in the last couple of years? What changes?
 - e) Are there any planned changes for the future? What changes? Is there a vision regarding sustainability at your event?
4. We would like to have a look at several aspects of events. The aspects are transportation, waste, catering, materials, energy and accommodation.
 - a. Transportation: how are you currently dealing with transportation at your event?
[Topics to consider: personnel transport, freight transport, attendee transport]
 - i. What do you see as possibilities to improve sustainable transportation at your event?
 - ii. What are barriers for you to improve sustainable transportation at your event?
 - b. Waste: how are you managing waste at your event?
[Topics to consider: waste separation & recycling, waste prevention]
 - i. What do you see as possibilities to improve sustainable waste management at your event?
 - ii. What are barriers for you to improve sustainable waste management at your event?
 - c. Catering: how do you arrange the catering at your event?
[Topics to consider: food waste prevention, donation of food, sustainable food, food packaging]
 - i. What do you see as possibilities to improve sustainable catering at your event?
 - ii. What are barriers for you to improve sustainable catering at your event?
 - d. Materials & communication: how do you handle materials at your event?
[Topics to consider: reusable products, sustainable materials, digital materials]
 - i. What do you see as possibilities to improve sustainable communication at your event?
 - ii. What are barriers for you to improve sustainable communication at your event?
 - e. Energy: how are you managing energy use at your event?
[Topics to consider: renewable energy]
 - i. What do you see as possibilities to improve sustainable energy use at your event?
 - ii. What are barriers for you to improve sustainable energy use at your event?
 - f. Accommodation: how do you arrange the accommodation for people at your event?
[Topics to consider: travel distance, sustainable accommodation]
 - i. What do you see as possibilities to improve sustainable accommodation at your event?

- ii. What are barriers for you to improve sustainable accommodation at your event?
- 5. Are you motivated to improve sustainability at your event?
- 6. What would help you to organize events in a more sustainable way?
- 7. As mentioned, the ultimate aim is to develop a checklist.
 - a. What is your opinion on such a checklist?
 - b. What would you look for in a checklist?
 - c. What are barriers that would prevent you from using the checklist?

Appendix 2 - Interview guideline facility staff

Interview with Safety and Environment Department of WUR

1. What sort of events does V&M have contact with?
2. What kind of stakeholders come to V&M?
3. Numbers of attendees and numbers of events
4. Aspects: what do you believe to be the most important aspects in sustainable events?
5. If necessary, explain our aspects: transportation, waste, catering, materials/communication. Are changes possible in these aspects to make the events more sustainable?
6. Did you notice any differences in organizing events over the last years?
7. How do you see the organization of events in the future? Are there already plans for making changes? (goals & plans)
8. Do you have tips for other people we should contact?
9. Do you know any best practices?

Interview with facility staff member on waste

1. Can you tell something about what you are doing for the V&M Department?
2. What is the current situation regarding waste and events?
3. Are there any weaknesses regarding sustainability? And what are possibilities to make changes regarding sustainability?
4. Did you notice any differences in organizing events over the last years?
5. How do you see the organization of events, from a waste viewpoint in the future? Are there already plans for making changes? (goals & plans)
6. Do you have tips for other people we should contact?
7. Do you know any events that already do a lot in terms of sustainability, and what do they do? What kind of sustainable practices are already implemented?

Interview with facility staff member on AID and other events

1. Can you tell us something about your role in the AID?
2. Do you also have a role in other events at the WUR? What events?
3. What is your opinion on the sustainability of events at the WUR?
4. Which sustainable practices are already implemented at events at the WUR?
5. Are there any weaknesses regarding sustainability? And what are possibilities to make improvements regarding sustainability?
6. From a sustainability perspective, did you notice any differences in organizing events over the last years?
7. How do you see the organization of events in the future? Do you know of any plans or goals to make the events at the WUR more sustainable?

Interview with facility staff member on 100 Years WUR

1. Can you tell us something about your role in the 100 years WUR?
2. How many events did you organize in the year 2018? What kinds of events?
3. Can you tell us something about the number of attendees at the different sorts of events?
4. Did you, while organizing, use a definition of smaller and bigger events?
5. Did you implement sustainable practices at 100 years WUR events? Over the year, did you improve sustainability?
6. For 100 years WUR, was there a budget for sustainability available?
7. We look at the different aspects of transportation, waste, catering and materials & communication. Was there a difference in these aspects for the smaller and bigger events at 100 years WUR?
8. Are changes possible in the aspects of transportation, waste, catering, and materials & communication, to make the events more sustainable?

9. (Are there any weaknesses regarding sustainability? And what are possibilities to make improvements regarding sustainability?)
10. If you would organize the events again, what would you do differently?
11. Do you think that it would have helped to have a checklist on how to organize events in a sustainable way?

Interview with facility staff member Cormet

1. Introduce ourselves
2. Can you introduce yourself? (In which buildings do you cater?)
3. How often does Cormet cater for events? What type of events? (size of event and duration)
4. To your opinion, how sustainable is Cormet?
5. Which sustainable practices are already implemented by Cormet? Is there someone in your organization with knowledge on sustainability?
6. Food waste prevention, donation of food, sustainable food, food packaging
7. Are there any weaknesses regarding sustainability? Are there any policies that restrict you from making changes? And what are possibilities to make improvements regarding sustainability?
8. Does Cormet decide on glasses, cutlery and tableware? Or do they give an advice to the event organizer?
9. Does Cormet decide on the menu? Or do they give an advice to the event organizer?
10. What kind of materials and communication does Cormet use? (to promote the food)
11. Is there anything implemented to prevent waste at Cormet?
12. Are there any planned changes for the future to improve the sustainability?

Appendix 3 - Coding guideline

Table 2. Coding

Code	Colour
Waste Transportation Catering Materials and communication Energy Accommodation Other sustainable practices	magenta grey cornflower blue cyan yellow green dark green 1
Benefits Constraints Possibilities	light green 2 light red 2 light yellow 2
How can stakeholders be motivated? How motivated are stakeholders? Checklist	red orange light red berry 1
Future plans	light cornflower blue 2
General information (number of attendees, location, duration, frequency)	light cyan 2

Appendix 4 - Coding overview

Table 3. Coding overview

<u>WASTE</u>
<p>-Plastic reduction -We pay close attention to what we buy -We have a trick for it, and so we cancel a few days in advance -Pay attention to how you deal with your production -Portion size -In a previous ACT, it emerged that there was a lot of waste in the Chinese part. -Special A4 flyer, OSP has also taken over: please help us to prevent food waste. Please take the leftover sandwiches in a doggy bag and bring them to your friends and colleagues -We do not pack our lunches, but we put them all on the scale -use as little plastic as possible -We stopped offering the window bag behind the cash register -Try to get as many straws and plastic material out of our assortment as possible -We produce in batches (buffet) -We also stick (buffet) -EcoSmart has five lines, and that is all separately picked up -We do not buy too much and try to sell everything as much as possible or try to incorporate it into your products. -And when it's up tomorrow, I'll order something more so that we have it again -rather than therefore also that I pay it off than I throw it away. -Straws - 100% degradable cleaning agents -Disposables Tableware: Luxury events are always with tableware - Stainless steel cutlery -Adding A4 sheets not to steal cutlery - quite strict. - It would be good if there is no plastic anymore. -every event has to take care of its own regarding waste. They can ask me regarding the conditions of the contract with Renewi so the prices et cetera. And I can give a bit of advice if they ask. - Ladder of Lansink: the top isn't waste separation, it is waste prevention. - management and supervision also help. - I think people are organizing an event and in the last minute they think "ah i need a container". - Sometimes they even order containers outside the waste contract. - The waste bins are emptied by a firm called EcoSmart. - The activity is related to the types of waste and then you can imagine what types of waste: what containers do I need? And how much waste will there be? - there is reusable and recyclable. - knowing how many people are coming and don't over-ordering food, that is less waste and that is less waste you have to separate. - We do have an informal plan and that is to reduce waste and improve waste separation percentages. - We are one of the universities that does best. -within the buildings you have to use the facilities that are in the building, if an outside event is organized by the university, they should use the contract firm Renewi. - There is a rule about no waste on the ground -Don't use paper plate, plastic cups and spoons. Use one type of material. -Hard plastic cups. -Waste separation was standard included at the party. -Waste separation was provided at the pavilion by the current waste management company. -waste separation. - no more throw away water bottles; -group packaging for lunch -Use hard cups -We separate the waste. -In the Orion building there is always a lot of waste, especially paper and also waste from the experiments from the study programs. - Paper is certainly separated, I am not 100 percent sure whether this the same for the rest of the waste. - lunch is not packed individually -Did not use any plastic or disposables. -No water bottles. -Waste, that's what I think is also going to catering quickly. -Upon entering there are four separate trash bins where it is separated, so that is already happening. -Sodexo has, of course, their separate waste. - Outside I understood that there are new trash cans, with separate waste. There will also be one here on the terrace. -Sodexo used cups, at Studium Generale we have mugs and jugs. -I think mugs are more durable than paper cups. -Impulse also has a certain quality level, and we say, from mugs you drink much better than from paper cups -Use the existing waste flows within the education buildings. -We don't use single packaged snacks. -Sometimes we have bottles of water. - Soda comes in glass. -Always use tableware. -We don't use plastic cups. -Just some leftover drinks. -Maybe some tablecloth. -During WURfest: hard plastic cups. -Use real glass and not plastic.</p>
<u>TRANSPORTATION</u>

- Van - Transport is an area we could improve in. -A lot of people come by car -On campus, everything was done by foot. We had electric cars for people who had difficulties walking. -You do communicate all means of transport to the attendees, so also by car. -minimize traffic. -Students move around by bike or walking. -Suppliers from the neighborhood -We drive all day with cars to transfer the attendees of the open day. -We do try to stimulate walking between the campus and Leeuwenborch and we also have guides walking. - we also have a car driving to bring coffee and tea to all the guides that are walking all day.- At the walk along days we do offer bikes for the students. - We offer a description for the route to Wageningen for car and train. - We have twice as much busses between the station and campus. - At walk along days students come by train and also the starting point of the day is at the bus stop. Also for the master open day most students come by public transport. - At the bachelor open day most students come together with their parents by car -A lot of people took the plane. -We rented bicycles for the students that stayed at the camp side and farm. -After the party, we transferred them to the camp side and farm. -Used busses for further rides. -Transport, no I can hope that most people walk here on campus. -Sometimes people from abroad want to stay the night and then we organize it in a hotel where there is space to organize the course, e.g. Wageningse Berg. -We try to do as much as possible on campus. This is close by for the teachers. -Attendees come on their own. We send them one document of practical information which includes transportation by car, train and bus. -If we go somewhere during the course, we often arrange a coach car. -We say where they can rent bicycles. -The busses are necessary. -We don't advise a means of transportation on the website. -Most people are from the region so they some come by bike or from Ede by bus.

CATERING

- de Leeuwenborch is very strong in biological, ecological - A large part of our range is ecological, bio, NVO responsible, sustainable vegetarian, vegan, also for healthy cuisine - open between 7 in the morning and 8 in the evening - If we still have food left and it is still eatable, then we can do it in the rest processing: Soups, sauces, and even the salad bar - we then get our soup from Kromkommer to still have our share in a piece of sustainability - We make croutons from old bread. - Meatless Monday: That means that 90% of the products we sell on Mondays are only vegetarian and some of them vegan - A sustainable soup every day. - the separate house where we sell fruit, apples, and pears - tofu, milk, buttermilk, gluten-free bread, vegan sandwich, Alpro's vegan line, seaweed burger, muesli bars of insects - action lunches that are part of the season - a lot of customization - the catering is quite sustainable. -Vegetarian. -As much as possible with the house caterers. They have sustainability already standard in their portfolio. -We did a lot on reducing food waste in the past years: minimizing what we buy, knowledge on what people eat on a day and how to distribute this. - local caterers instead of WUR caterer; - Voedselbank is an emergency solution -Large amounts of food. -We ask the caterers from the Leeuwenborch, Forum and Orion. -I think the one of the Leeuwenborch is the most sustainable. -At the walk along days lunch is provided in student houses. -In the Orion there is no food left at the end of the day. -In forum we often have food left. -We have an agreement that only people that work at the open day get a lunch and this lunch is offered in batches so not all at once. - We communicate to the students that they get 2 to 3 sandwiches per person. - We do not provide lunch to the visitors anymore since there was too much waste. -The catering at campus is already a bit sustainable minded. They try to reuse the vegetables again. -We tried to make the number of people correct. -With the students, we also provided vegetarian meals. -Used the catering at Orion. -Breakfast was bought by two students and provided to the camp side and farm. The leftover food was collected and brought to Thuis. - Sodexo does the catering. - lunchtime lectures I always have coffee and tea. - In the beginning, it draws people to the lunch, because then I also served lunch, and that always helps - I have already abolished that because you threw away too much (lunch) -We try to keep the numbers the same and communicate this with the catering. -For example, we looked if the snack during the break could be healthier. -We try to indicate the number of people and dietary requirements as good as possible. -We try to do more healthy options. -I don't know what happens with leftover food. With

banquets, it goes back to the catering. -Vegetarian options are standard. Sometimes seasonal. Sometimes the organizations wants everything vegan and then it becomes custom-made and we look at that with the caterer. Sometimes halal if there are participants from other countries, e.g. Egypt. -No food offered at both locations.

MATERIALS AND COMMUNICATION

-We do have a website where we put things on -Poster listing what is sustainable -We sell the Doppet -banqueting folder with different types of lunches -No plastic bags as doggy bags - Communication is very important for the company. I think an app is very important. -If you provide materials yourself, like AID, then you have more influence -Sustainable use of materials. -WUR sweater made of only recycled materials. -Everything from recycled materials at the opening party. - We decided that all our gifts and gadgets had to be sustainable products. -Ongoing practice to reducing paper waste: reduce flyers, booklets, from associations. - gadgets from AID as sustainable as possible: bags from juten. Doppers, bread baskets are sold. Coffee cup for the crew -Whatever that is needed will be ordered, so that is not very sustainable. -we did very consciously ban the plastic bags. -People receive the program via email, the website and also on the day itself we have students to inform the attendees. -we use digital QR codes for entering the open day. -We do not use any brochures any more when we go to the high schools. -you can download all brochures from the site -the PowerPoint slides from the open days can be found online when using a specific link - at the master open days we do not offer any brochures anymore -Some study programs have gadgets like pencils. -we provide T-shirts for the students that work at the Open Day and we reuse them. - Badges are reused and the paper is recycled. -Usually we had a goodie bag at conferences, but now we decided to give everyone a Doppet with the logo of WUR and ELS. -Used an event app and did not print all the programs. We did print the programs and participant list for the staff meeting. For the students, they were in the event app. -Printed a few posters. -If you are really sustainable, you don't use goodie bags anymore. -Limited stack of flyers -Poster -The website and on the monitor screens -We try to use as many channels as possible to reach as many people as possible, and some of them are still on paper, and these are really small quantities. -Sometimes we do not provide a folder with presentations but a keycord with a USB-stick. -The course folder is on paper. -We don't do a course folder if the event does not have much budget. -We try to do as much as possible digital. -Sometimes flyers during congresses and banners. -We use way less hard copies than five years ago. -Incidental, we send something by post. -We regularly have Doppers. - Sometimes promotion material with gadgets from companies. -Pen and notepad provided by the course material. -We do the questionnaire often digital. -Never use paper tickets. -Invite people online. No posters and no flyers. -We used posters sometimes for bigger events. Then we looked into the kind of paper we used. But we don't use posters for WURtalks, all promotion is online. -No materials are provided for the speaker. -We record everything and then put it on YouTube. -We never give handouts.

ENERGY

-Green battery as emergency generator. -The biggest contributor was energy, that was sustainable since it was green energy from WUR. - Used an air conditioning on diesel. -green energy network WUR. -LED lighting, but that is the standard -the energy used is coming from the WUR buildings. -In Orion there are some machines at the open day that use a lot of energy -Used energy of the university. -I cannot do anything about power because that is WUR wide -We don't take energy consumption into account. -No tents, we just use the regular lecture rooms. -Green energy from the buildings. -During WURfest: used a green battery instead of diesel aggregate for extra energy.

ACCOMMODATION

-Accommodation is not applicable for the open days. - Sometimes at walk along days people stay over at student houses -Had to host 150 students. At the campus, there are no hostels. So, we arranged the camp side the Wielerbaan and farm Hoekelum. -Accommodation has to be close by. - There is not much here in Wageningen. Short Stay Wageningen didn't want to rent for a few days. The sport school, old buildings and WICC were too costly. -Often Wageningse Berg. The only other options are WICC and Fletcher but Wageningse Berg has more of a business look. -In addition, a list with small accommodations such as bed & breakfasts and small hotels.

OTHER SUSTAINABLE PRACTICES

-Some of the events of 100 years WUR will be organized again. -We used the existing facilities as much as possible. -We had an event managers consultation every three weeks, in which also the sustainability goals were shared. -We let all sorts of regular events also use the pavilion. -Showed information in toilet, a little piece of paper telling you something about sustainability: use of WUR green energy network from wind mills, hard cups, minimize traffic. -Did a campus tour with a focus on sustainability. -On the top of the website, we put information on sustainability. Later we did a questionnaire on what attendees noticed. -We hold a broad introduction of Wageningen and how sustainability is integrated at the WUR.

BENEFITS

- that is also much appreciated (vegan products during Chinese lunch) -The event is not going to suffer from it if there are changes -Mentors already know there is going to be waste separation because it started a couple of years ago. - waste bins are always at the same place in Forum. - waste separation is now a subject in the student housing -Organizing events again: not a one-off investment but an investment for a longer period. -reducing food waste saved us a lot of money. - Local suppliers is easier to talk to if you have a problem -Walking to the Leeuwenborch takes less time than going by car and while walking one of the guides can provide information. -Having lunch at the home of one of the students is way more fun and a nice way to talk to each other -Used the catering at Orion so you don't have to move a whole group of people. - If it is pure because it is wasteful then the budget would be less -If we provide the course folder on USB, the speakers have more time to make their presentation. -On campus is practical and attendees like to experience the ambiance on campus. -It costs less work and money to not provide the course folder. -Saves paper and work to do the questionnaire digital.

CONSTRAINTS

-students or guests who think about their wallet. They have to make some large purchases, and then they opt for the cheaper, the non-sustainable product. -So, you want to have that because otherwise, they go to one of the other caterers to get an unhealthy snack. -You take a risk that if you make too much, you have to throw more away -A foil must be used for a muffin. Otherwise, it will not remain good. -Gluten-free bread is in the freezer, therefore it is not visible, people have to ask for it -Communicating is difficult, to make it clear to students. -Everyone is watching their cell phone all day. -people don't notice the list of sustainable things we do. -We don't have a specific someone on sustainability in our organization. -everything I do must be discussed with my head office. - Someone has to start with the sustainable initiatives, someone has to be the forerunner. -Food on the buffet, you have to throw it away after 2 hours. -If people paid for sandwiches and decide to take the leftover with them, it is their responsibility. But it is our responsibility if we are going to distribute the leftover sandwiches. -There is no option to recycle biodegradables -Cardboard plates are an option, but those are not pleasant if you want to take the food with you -cutlery is stolen: For example, we run out of cutlery at the end of the season and then we will switch to plastic. -a biodegradable fork and knife also look like plastic; therefore, people might throw it in the plastic container. -for example, with the vegan yogurt, there are straws. -We will remain a commercial

company. -meat is always a discussion. -waste options are little bit more expensive. -we are not nicely located beside a railway station. -Paid parking has also a political dimension. -Nobody wants to put a price on it (paid parking) -It is the first time for many people that they come in contact with waste separation. -the students are here to party, not to separate waste. In events, it is different every time where the bins are placed. - You need a lot of bins and when you separate waste you need to double the number of bins. -When you want hard plastic cups, you need a place to rinse. - When you have a BBQ there is a lot of contamination of the waste products - not everything that is separated is from a good quality. - you have the user side of waste separation but also the backside of the organization and they also produce waste which is very different than the waste that is produced at the 'frontside' of the event. - You can be there at an event and still not noticing anything about a particular subject. - there is no written policy subscribed by the board of the WUR. - we have waste from research and that is more difficult. - city council takes eight weeks to arrange the permit. - you have to agree with your supplier what type of material etcetera. - all suppliers have their own type of disposables. -It was never done before. We had no comparable events that were of this size. -There was no specific budget for sustainability, it had to be paid from the project budget. -When you use Impulse, you have to work by their method. -Obligated to first look at contract caterers. -It has to be within the budget. -At small events, sustainability gets easily overlooked. -There are no requirements from the university. - have to take the costs into account; - not always easy to go outside the box. -The easy things are already done. - new things then you have to organize things in a completely different way; - sustainability is one of the things that go along with the AID; - students can decide for the budget themselves; - people don't separate waste properly; - people are generally not interested in information on how sustainable you are; - because of other priorities making sustainability visible did not land. - everything more we can do, will cost real amounts of time or money or both. there is not really an incentive to move forward. - you have to do quite some research before you know what is really more sustainable - undefined parameters in the system (e.g. big numbers, weather). - no flexible suppliers and also the entire supply chain is fixed. - only local caterers would costs at least one person working on that for an entire year. - making steps is difficult when your scale is bigger. - the new board are new to the subject and have to start with other things than sustainability. - we don't have a grey water system running at WUR. - if it works for Lowlands we do not know if it is sustainable for small scale events. - For the buildings there is sort of a goal, but it is difficult to translate this to events. - people still think flyers and booklets are the easiest and cheapest way to promote themselves. - plastic is not separate properly, at home PMD and at university we do not have this. - Splitting waste afterwards will cost money and volunteers will never want to do it. - With the information market for instance it is difficult to know what waste will come in because we have many parties providing goods. -People are very greedy: they take many folders but don't do much with it. - You do not want to encounter having no brochures to offer - from the study programs there should be a person saying that they stop providing folders, this cannot be me. - at this moment it is no priority to have more sustainable materials - I need to have more knowledge on sustainability - we really need all University buildings for the open day, so we cannot have it only on Campus. - train delays can have influence on the program. - at Forum also people from Idealis, study associations etc. have lunch and therefore it is more difficult to know the exact numbers on forehand -The costs of the Dopper were a bit above budget, but the university accepted it. -Things that cost money are difficult as it was an event you do not have to pay for. -We don't have the fact and figures and don't have the time to research this. - You can't force people to take the car or the bus. -It is not very wise to put people on a bicycle after a party. -Some people cannot ride a bike. -We didn't buy organic breakfast due to cost reasons. - Program and participant list is still common. -Not everyone is used to an event app. -People came to the information desk if they didn't know. -We couldn't change the temperature in the rooms in Orion, it was very cold. -Until September there were more visitors than now. Now I notice by the change of the timetable that it is just harder. -And it is very difficult to measure because people do not have to register, and some people stay for a while and leave again. -Because people keep a story and then they go again -Everything that is public, I try to know about it, but I am only one

person. -If I organize myself, I can say how I want it, but we also facilitate. -It is much smaller here. - Attendees mention that they like writing on paper. -Every program manager of a domain decides what they want to do in terms of sustainability. -Some professors and experts value the course folder and we want to maintain good relationships with them. -It takes too much time and energy to arrange everything regarding transportation. -We are not allowed to share personal information for carpooling. -With some courses like plants, it is hard to organize it close by. -With catering we are bound to what is offered at the campus. -The caterer said that he was not allowed to distribute the leftovers, but we were allowed to take it. Then we walked around with it and it was soon gone. -If there happens something to the student after eating a sandwich, the caterer is responsible. -After two hours, the caterer has to throw it away. -For promotion, we are dependent on how well the courses are known by people. -The printer is arranged via WUR. -Response is lower when you do the questionnaire digital, so course teachers ask for a paper questionnaire. -WUR has contracts with accommodations, which are cheaper. -More online education does not really fit within their program. -Difficult to change how people get to Wageningen. -No idea what can be improved because it is quite small. -There is no specific budget for sustainability, it has to fit in the regular budget. -Many people will say that it is not easier to get here by public transportation. -Tablecloth is organized by Cormet. -It is difficult if the sustainable option is really expensive, a bit more expensive would be okay.

POSSIBILITIES

- We do not have an app yet (OSP does) - You could put a cardboard plate down (at the buffet) -if there is a huge congress or event on campus, we could work with busses. -We are dreaming of paid parking. -The only thing to solve the traffic issue is to put a price on it -Waste you can't prevent, make sure it is all of the same material. - If it is possible to rinse use it so you have no waste. -Look at other universities. -It would have been more useful to have the conversation with the events and sustainability expert earlier, for example 2 years before. you have to provide information on moments the people take information into account. - with smaller events you can work in a lot of teams and because it is smaller you can do things different. - changing the food supply. - grey water. - we are investigating if we can separate waste afterwards. So, we collect PMD and split this afterwards. -We could tell the caterers what we want. -Idea to have the EcoSmart waste bins at the middle of the information market so people can separate the waste. -It is perhaps a good idea to have bikes available at the Open Day -Promotion and materials to show what is exactly sustainable at campus. -Give some money back to plant trees. -If people pay for the event, you can take a percentage to put in sustainable project to compensate. -An event app by the university that you can use for your event. - then Sodexo is the one we should address and to honestly confess that I have never actually done that way - That we can give them when a large group comes along, maybe that is just as good to mention. - But I'm certainly going to share it with the floor managers who are here every day because I find that interesting. - Maybe it's nice if I still have to convince people, that you have something, but it should not be a paper sample, but 'did you know that' on it? - a slide at the end of the presentation that shows: today you have emitted so much CO2 at this event -We rented bicycles once. -Only organize courses that are close by. -Insects can live on the waste from catering. -Waste is a shame except when we use it properly afterwards. -Look at the material from the flyers. -A green accommodation facility at the WUR campus. -More online education. -We could say that it is easier to get here by public transportation. -We could communicate to our attendees that our event is sustainable. -We do not communicate anything about how sustainable our event is because we never thought about it.

HOW CAN STAKEHOLDERS BE MOTIVATED?

- We have inspections three times a year. - If the sticker is viewed and it should have been gone, then you are in trouble, and you get points deducted. - We speak a lot of students. I often hear

things that we can do something with. -The student council brings issues up University ranking for sustainability. there is no written policy subscribed by the board of the WUR.

- requests to plant trees on the campus to compensate CO2 emission or an event
- Advisory board of previous board members and some people of the industry. INOfest.
- sharing success stories.
- event organizers could benefit from sharing best practices if they are new or less experiences and if there is a personal incentive to go for it.
- we have a green advisory board next to the advisory board.
- people from policy and practice would help me to create opportunities.
- WUR has to put forward goals that we have to meet.
- it would help if the university states what they want to focus on per year.
- I would need some help because I do not have much knowledge within this field.
- I think providing of knowledge would help and also to sit together and have a look at the sustainability of the event.
- Perhaps someone can have a look at the entire open day and notice what can chance but they also have a look at the costs.
- giving an apple to everyone at the end of the day also makes that people leave the WUR with a smile on their faces
- We tried to exchange ideas, for instance during the sustainability meetings with GOW, and that helped.
- More guidance from the university by creating guidelines.
- Offer a talk to our staff.
- It is new to me, and I will also write it down because I would never have thought about it
- I find that very difficult because at the moment I do not have such a good idea of how I could get it more sustainable than what it is now.
- The first thing that comes to mind is the catering.
- Then it is more awareness among the people
- A bit of those critical numbers to indicate you realize what we are doing now and where it could go, something like that.
- Maybe that could help. I think that many people do not have a good picture of it.
- But I cannot stand it as well as it is such a teaching finger, I certainly do not want that at all.
- Never heard of GOW.
- Would like to see examples from others.
- A sustainable menu at the WUR catering, or a menu with local food.

HOW MOTIVATED ARE STAKEHOLDERS?

- Extensive waste research.
- I think it's fun and exciting. We believe we are doing well, but it is always fun and exciting when it comes out that we are doing well.
- to do as much processing as possible
- Within our company, there are also several discussions going on about how we can make specific packaging even better or different
- We have a brand manager here who is very keen on that type of business
- We then switch on and look for another bag
- I have the student council twice a year here, and then I show them everything and then they do not understand either: why do not you tell me this?
- I want to explain what we do. And I would like advice on that.
- however different people who know a lot about it (regarding sustainability)
- I gladly join project groups on sustainability.
- Five years ago, Grow and Terrabite was a company that made oyster mushrooms on coffee grounds.
- I like that very much. I did not think all of it, but I did become a kind of ambassador for that kind of thing, and I like that.
- The other thought that I was crazy and that I would not sell bottled water anymore, but I think you can have it very nice side by side.
- We also embrace that, I like.
- We always try new things and connect with the needs of people
- We wanted to start with biodegradable: We were ready, we have the plates, cups, cutlery, everything
- much more people are talking about the topic. We can learn from the students. The time is there to improve and to change certain things.
- we are seen as a forerunner. This gives a certain obliged to do something.
- It would be good if we could be a forerunner in sustainable events as well
- Because this is not possible, I already discussed with Linde what could be alternatives.
- Sustainability was one of our main goals.
- We have had conversations with many parties to find the best solution.
- Have been in contact with someone with knowledge on events and sustainability.
- AID has to be in front regarding sustainability.
- sustainability is not the main focus
- sustainability is not really the focus at this moment, but it is somewhere in the back of our minds.
- we do take the waste part consciously in consideration.
- it is painful to see when there are so many brochures left and that they are thrown away.
- With the staff it is not so important to show that your event is sustainable, because the staff is older and not as concerned as the students nowadays. Sustainability is customer driven.
- Some people complained that the breakfast bought at Lidl was not organic.
- Appreciated by the attendees that there was an event app and only a few posters.
- Last year there were complaints about

sustainability, so this year we made things more visible. -No, I did organize some events in a sort of series with Green Office that dealt with sustainability. -caterers consult and also looks at sustainability -Maybe I see something completely overlooked which is very obvious, but I do not see it for a while. -I find it interesting to know in itself because a part is also entirely outside of me -Yes, if possible, I want to provide it (more sustainable organization) at least. -but at this moment I do not see anything that I think is such a waste. -I would love to work together with Green Office anyway. - You know, I am very open to it, but I do not see the opening right now, but it is there. -No so not, so that's why I find it interesting to know how I should reflect that -Sustainability is not a separate element while organizing the courses. It is more in terms of fine tuning. -Provide more healthy options because attendees request it. -Doesn't know how motivated they are. Maybe in terms of printing, food, awareness, putting it on the agenda to think about with course instructors. Maybe this conversation has already changed their view. -We could steer people in a certain direction with the information regarding transport, but we are not going to do that. -We don't do anything special to make the WURtalks more sustainable. -I think most people in Wageningen are interested in how to organize it as sustainable as possible. -You can go to GOW to discuss possibilities, but many people don't know and just won't go there. -There are so many people doing this, but you have no idea what other people do.

CHECKLIST

-Focus on: Waste, energy, mobility, food. -What happens when you purchase something, the history, and the chain. -How environmentally friendly is a product produced? - I think the checklist is very good. Ones you have it, you can give it to other universities. I don't have a checklist. - Even if the checklist is five steps and people use only two, that is better than now. -No definition of smaller and bigger events. Based on the target group, we look at what we want. The larger the target group, the larger the event. -It needs to be specific. For example, specific guidelines for emergency generators and electricity. -Include waste, energy, materials. -Think about which elements or products have the most impact: e.g. fuels, electricity, etc. -If you organize an event with international speakers, the organization is different. You have to arrange more, it takes more time to prepare. -It is not just about how big an event is. The opening of the academic year is big, but it is regular business, so less work. -For me a checklist does not help. -It is never up to date. If it is too specific it won't be the best solution next year. -If it is too broad it does not work because it states things I already know. -It will feel as a sort of administration for the sake of administration -it would be very nice to have a checklist. -I would have to know better for myself how things are going right now and where we can go to. -It is important with the checklist to keep on having a look at it: what can I achieve, and can I use this? -Provide a list or an app. -Making people conscious of what we are already doing on campus. Give ideas to others to do this as well at their own campus. - I think that would help me because I now have a kind of empty head of what do I have to think about sustainability. So perhaps there are points that never thought of related to this subject. -Raising awareness. -A general checklist would already work, but one specific for WUR would be great. E.g. with caterers and printers. -Keep it flexible. -Could be a digital program. -You have to keep it up-to-date. -Should be very practical. -I really need to know some options that I could do and who I should ask for it. -Recommends providing the checklist to Elike, so she can give it to the event organizers. They already have to ask her if the event is possible. -I would not use the checklist if it is not specific. -It should not be a requirement to check all the boxes on the checklist, otherwise you can't organize it. -There are a lot of things that people don't know, that are easy to organize.

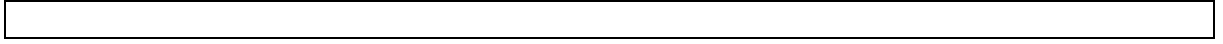
FUTURE PLANS

- It is a point of attention, and they are doing it (biodegradable) - The future would be the biodegradables - communication in particular (who we are and what we do) -we have a mobility vision and agenda. We are working on concrete measures for the coming years. -The transport issue is relatively new on the agenda. -For the mobility vision and agenda, there is 100.000 euro

available. For example, to improve the bicycle racks -We want to improve, and the government wants less residual waste. They are even talking about no residual waste by 2050. - The goal of the university is to help consumers reduce their waste, that is a research subject but we have to practice what we preach -plan to make things visible at the place where they are, e.g. QR code at the bar where you can check more information on sustainability; - I do not know what should be the vision for the future - hope to get rid of the paper printed programs -GOW is working on roll-banners with facts and figures that every event could use. -In several years, everyone uses the app and we won't print anymore. -The Green Man from GOW. - Then maybe I'll come back to that catering, how that could be more sustainable than now.

GENERAL INFORMATION

- Forum / Gaia Lumen / Atlas - The company restaurant on the first floor, the grand café on the ground floor and the banqueting department here in the basement - Small kiosk - Cormet has been active on campus for six years - Coffee/tea, lunches, meetings, drinks, small receptions, and parties - 150-200 people - Daily care of events - many buildings that do not have catering, and we can all deliver them - At 175 locations throughout the Netherlands -Three ordering times in the week -When there is an event at the campus, they have to get a permit, my department facilitates this. - Wageningen does it quite well in the ranking -I am an environmental health specialist and the contract manager for waste. Also, I am a CREW member of the AID. - me and my colleagues are responsible for the permits that are required for large events. - normally when you organize an event for more than 50 people you need a permit. We made some arrangements that if it is 100 to 150 persons outside, we mention it that there is a gathering but since we have enough parking infrastructure, we do not need a permit. We do need a permit when there is loud music. -When WUR organizes it, we help the processing the permit. When it is an outside organization, they need their permit directly from the city council. - Wageningen Campus, you always need the permission of the owner - My role is to check if an activity is allowed, what the organizer has to do in an account when the organizer needs a permit of the Municipality. - For events not organized by the Board of WUR, I am allowed to give (or refuse) permission in their name - BBQ place. Nowadays, this is about 30-40 times a year and can vary from 10-50 people - Last two years one of the two project managers of 100yWUR -We have initially set up the organization, then project groups were formed to make the programs -Wanted to serve different target groups -Very diverse program -More than 30.000 visitors for all the events; Science week 700-800, opening night 3000-4000, staff party 8500. -I am the boss of five students that work for one year on the AID. -I will give the broad picture; the students will organize it -Two times a year we have the bachelor open day and two times a year we have the master open day ~Also I organize the walk along days - most students come to the bachelor open day together with their parents -Project manager of a few conferences that already took place at campus. -Annual event with seven universities. So, every seven years it takes place in Wageningen. - We formed a group a few months ago with GOW and some other events, like the AID, student challenge and BSc open day was also invited. -The facility staff connected me with GOW. -210 students and 103 staff. 50 of the 103 also stayed for the student conference. - I do not know who you are going to talk to more, but I hope you can set up a checklist because I do not get much out of it at the moment. -can make hard with figures and maybe also say that we strive to have so much less waste in so many years. -Organizes a number of courses, especially for workers. -Courses and trainings. -Varies from 1 afternoon to 2 weeks. Mostly 1 day or more. -On average 20 to 30 attendees. Sometimes 200 or 10. -Organize as much as possible on campus. - Catering is often a lunch at Forum, Orion, sometimes in a hall at Impulse. -I focus on how we can tell the Dutch people about the research we do here at WUR. Next to that, I am asked to organize a lot of things here at the campus; WUR 100 fest, opening party of Orion building, WURtalks. -We use one of the rooms in our own buildings, mostly in Forum, or the library in the city center. -People just come to the building, listen to the speaker, and then have a drink. -Sometimes the topic is about sustainability but then it is just because they are researching that topic. -Between 20 and 100-150 attendees. -WURtalks are given for two years or so.



Appendix 5 - Checklist comparison

In addition to the comparison of the checklists based on content, the same checklists were also analyzed and compared in terms of their overall structure, layout and design. The following aspects were focused on: cover page, page numbers, checkboxes, extra space, layout, images, colors, reward system, categories, points per category, levels of sustainability and extra information. The following was found after comparing 21 checklists:

Aspects	Explanation	Results
<i>Cover page</i>	Do the checklists/guidelines have a cover page (with introduction)?	11 out of 20 do have a cover page.
<i>Page numbers</i>	How many page numbers do the checklists/guidelines have on average?	0-5 pages on average.
<i>Checkboxes</i>	Do the checklists/guidelines make use of checkboxes?	Most are without checkboxes. If with checkboxes: squares are most common.
<i>Extra space</i>	Do the checklists/guidelines leave extra space for comments?	Only 3 out of 20 do.
<i>Layout</i>	Are the checklists/guidelines presented in landscape mode or portrait mode?	16 out of 20 are presented in portrait mode.
<i>Images</i>	Do the checklists/guidelines use images?	14 out of 20 do use images.
<i>Colors</i>	Do the checklists/guidelines use colors?	18 out of 20 do use colors.
<i>Reward system</i>	Do the checklists/guidelines make use of reward systems?	5 out of 20 make use of a reward system.
<i>Categories</i>	Do the checklists/guidelines order their checkpoints according to categories?	19 out of 20 do order according to categories. The categories most often represent a topic.
<i>Number of points per category</i>	How many points do the checklists/guidelines mention per category, on average?	5-10 points, on average.
<i>Levels of sustainability</i>	Do the checklists/guidelines allow the user to check different levels of sustainability?	1 out of 20 do.
<i>Extra information</i>	Do the checklists/guidelines provide additional information about the content?	4 out of 20 provide additional information about the content.

Appendix 6 - Interviewees opinion on a checklist

What should the checklist look like according to the interviewees?

Within the interviews, stakeholders have shared their opinion of the idea of a checklist. Those ideas are summarized within this paragraph. Most stakeholders were enthusiastic about the idea of the checklist. However, the interviewee of the AID organization stated that for the AID the checklist would not help. According to the interviewee, a specific checklist is never up to date and when a checklist is too broad it would state things that he already knows. For other event organizers it would help them. The interviewee of Impulse for example would be happy with it because it would give her an idea on what to improve regarding sustainability.

What should it entail?

According to one of the interviewees of WUR's Safety and Environment department, the checklist should focus on waste, energy, mobility and food. According to the organization of 100 years WUR, the checklist needs to be specific and about elements or products that have the most impact. Also, the interviewee of Wageningen Academy stated that it would be great if the checklist would be specific for WUR. Moreover, this interviewee argued that it is important to keep the checklist up-to-date. The interviewee of the WURtalks thought that it also should be very practical.

Some event organizers also thought of providing information on the checklist. The respondent of ELLS thought that it would be good to make people conscious of what already is happening at the campus. Also, the one who is interviewed of Wageningen Academy stated that the checklist should help raising awareness to improve sustainability. Another interviewee argued that it would be nice to have information on the purchase chain and also on how environmentally friendly products are produced.

How to provide the checklist?

Some stakeholders had already some ideas on how to distribute the checklist. According to the organization of ELLS it would be nice to have an app. The interviewee of Wageningen Academy agreed with having a digital checklist. The one who is interviewed of WURtalks suggested to have the campus manager providing the checklist, since most events need to ask for her permission when organizing an event and that would be a nice moment to hand over the checklist as well.

Appendix 7 - Checklist

GOING FOR GREEN

CHECKLIST

FOR ORGANIZING SUSTAINABLE
EVENTS AT WAGENINGEN UNIVERSITY
& RESEARCH



TRANSPORTATION



CATERING



ENERGY



WASTE



COMMUNICATION &
EVENT MATERIALS



GREEN OFFICE
WAGENINGEN





GENERAL INFORMATION

Welcome! This checklist was developed for everyone that wants to organize an event at Wageningen University & Research (WUR). The purpose of this checklist is to help you organize your event in a more sustainable way. Within this checklist, you will find recommendations that are categorized under different aspects. The recommendations that are included in this checklist are derived from research on how the sustainability of events can be improved at WUR. The research report can be provided upon request. The report can give you more information on the research that was done as well as explain the recommendations that are made in the checklist.

By using this checklist, and implementing its recommendations, your event has the potential to be a prime example of sustainable event organization. It can enhance your reputation while educating your attendees on the importance of sustainability issues. In order to achieve these positive results, general recommendations that are essential for this purpose will be given below.

First of all, it is highly advised to assign someone within your organization to be responsible for the sustainability of your event. This will ensure a continued focus on the sustainability of the choices you make. Secondly, a specific part of your budget should be dedicated to sustainability. Even though many recommendations can be implemented without any additional costs, a budget will make it easier for you to take the additional step. Furthermore, we advise you to share your knowledge, ideas and success stories related to sustainability with other event organizers. Learning from each other can be an effective way to keep developing. Besides sharing your success stories with other event organizers, communicate these stories to your attendees as well. For example, dedicate part of your event to explaining what actions you have taken to become more sustainable and what the impacts of these changes are.

Even though the implementation of these recommendations will help you to improve your event in terms of sustainability, we recognize that it might not always be possible to be carbon neutral. Therefore, we advise you to always offset at least part of the event's carbon pollution that could not be prevented. Doing this includes purchasing carbon offsets or supporting (local) climate neutral initiatives

We hope the checklist helps you during the organization of your sustainable events!

Green regards,
ACT team 2075

December, 2018



TRANSPORTATION

TRANSPORTATION TO THE EVENT

- Encourage attendees to use public transport to the event.** For example, cover the costs of public transport within the ticket price of the event, or welcome your attendees at the bus stop.
- Award a special prize to the attendee(s) that used the most sustainable transportation method to travel to the event.**
- Provide clear maps and directions for walking and cycling.** For example, highlight where bike racks are located on a digital map.
- Provide clear directions from public transportation stops to the event.**
- Encourage the use of carpooling.** For example, ask attendees in advance if they are willing to share their contact details for carpooling purposes during pre-event communications and/or direct attendees to free carpooling websites.
- Contact the public transport company to arrange more busses between the station Ede-Wageningen and the campus of Wageningen.**
- If your location is not close to a bus stop, make use of (electric) shuttle buses to and from your event to station Ede-Wageningen.**
- Try to avoid scheduling the start and end of your event at peak travel times.**

TRANSPORTATION AT THE EVENT

- Encourage attendees to walk between the different locations at your event.** For example, hire volunteers that guide the attendees.
- Encourage attendees to cycle between the different locations at your event.** For example, provide bikes for attendees for free or provide information on where bikes can be rented.
- If you want to offer motorized transportation at the event, anticipate on the amount of attendees wanting to make use of this.**
- If you want to offer motorized transportation at the event, make sure that transportation means offered are low emission, hybrid or electric vehicles.**
- Provide electric golf carts for people that have difficulties with walking.**



TRANSPORTATION

WHEN ATTENDEES TRAVEL BY PLANE

- Encourage international attendees travelling by plane to book direct flights, fly economy class and book CO2 neutral seats.

REDUCTION OF TRANSPORT

- Ensure that the transportation of supplies is centralized by using a shared storage space.
- Aim to hire local workforce, speakers and volunteers as much as possible.
- Work together with local suppliers.
- Consider if it is necessary that attendees come to the location or that it is possible to arrange online. For example, offer possibilities for long-distance attendees to attend via virtual conferencing.

OTHER

- Collaborate with travel companies and logistic providers that have implemented green policies in their day-to-day operations.

HOW TO MAKE IT VISIBLE?

- In pre-event communications and on your website, promote sustainable means of transportation for attendees, staff, suppliers and speakers.
- Publish numbers on your website post-event, showing how many people used sustainable transportation methods.



CATERING

TYPES OF FOOD

- Ask your caterer for fruit and promote fruit and vegetables as a snack.
- Ask your caterer to serve vegan and vegetarian food options.
- Ask your caterer to serve local and seasonal food options.
- Ask your caterer to serve organic food.
- Ask your caterer to serve food that is made from rest processing. For example, Kromkommer soup.
- Make vegetarian food the default option for all attendees, and inform them about this choice before the event.
- Instruct attendees to contact the event organizers if they have specific dietary requirements, or create a registration system in which attendees can register their dietary requirements.

FOOD WASTE

- Anticipate pre-event what to do with leftovers.** For example, implement a leftover food pick-up system via an online platform or donate food to a food bank or an organization like 'Thuis'.
- Offer doggy bags to your attendees.**
- Make sure you know in advance how many attendees are attending the event and order food accordingly.** For example, make use of a registration system in order to do this.
- If food is served buffet-style, ensure to bring out the food in batches to make sure that unused food can be given away post-event (keep in mind the two-hour rule).**
- Arrange a portion size that fits the needs of your attendees.**
- Avoid pre-filling glasses as much as possible.**
- Inform your staff and attendees about the amount of sandwiches or other food that is available per person.**



CATERING

CATERING MATERIALS

- In pre-event communications, encourage attendees to bring their own reusable cup and/or bottle.
- Ensure water stations are in place for attendees to fill up their reusable glass or bottle, rather than offering throw away water bottles.
- Avoid offering single-use straws, coffee stirrers and napkins.
- Use dark-colored, reusable tablecloths rather than light-colored tablecloths during your event.
- Use reusable tableware such as cutlery, glassware, plates.
- Use hard plastic cups or glass, if there is the possibility to rinse glassware.
- Use mugs and pitchers instead of paper cups.
- If disposables are used, ensure that they are made from compostable or biodegradable materials.
- Ensure not to make use of individually packaged food. For example, avoid individually packaged lunches and snacks.
- Ensure not to make use of individually packaged food-related items, such as condiments, milk, sugar, salt.

HOW TO MAKE IT VISIBLE?

- Provide information to attendees about the sustainability of the catering of your event. For example, place signs with fun facts at your event.
- Ensure that attendees know that they can take leftovers with them.
- Communicate that attendees can use their own reusable cup or take away container. Consider offering discounts.



ENERGY

VENUE & TIME OF THE EVENT

- Ensure that the venue chosen for the event is appropriate for the amount of people attending.**
- Aim to hold your event during the day.**
- Try to host your event during milder climate months.**

HEATING & COOLING

- Make sure to turn off unnecessary heating and cooling during the event.** For example, avoid using the airconditioning when setting up or packing up the event.
- Ensure that the venue temperature is between 19 and 22 degrees Celsius.**
- Ensure that doors and windows are closed when heating or air conditioning is on.**
- Make sure to turn off unnecessary heating and cooling during the event.** For example, avoid using the airconditioning when setting up or packing up the event.
- In warmer months, provide cooling solutions that do not use energy.** For example, ventilate the venue by opening all of its windows.

REDUCTION OF ENERGY USE IN GENERAL

- Make sure to turn off electrical equipment, lighting and other sources that use energy when not in use.** For example, assign a person to check this.
- Encourage the use of more energy efficient electronic devices.** For example, use LED lighting.



ENERGY

USE GREEN ENERGY

- If you need an emergency generator, use a green battery.**

HOW TO MAKE IT VISIBLE?

- Provide opportunities for attendees to generate their own energy.** For example, let people bike in order to activate a blender (make your own smoothie).
- Communicate to your attendees that WUR generates its energy with wind turbines.**



WASTE

WASTE SEPARATION

- Guarantee that separate bins are available for paper; plastic, tin cans and drink cartons (PMD); organic; and other waste.**
- Contact the firm Renewi eight weeks in advance for events that are organized outside the education buildings, and ask them for separated bins.**
- Ensure that bins are placed in visible and high traffic areas.**
- Use the separated waste bins from the firm EcoSmart for events inside the education buildings and provide attendees and staff with a digital floor plan showing where the bins are located.**
- Ensure that all bins have clear signs with images indicating which waste products go in which bin.** Pay extra attention to event-specific and unusual waste products about which event attendees might have doubts.
- Minimize the types of materials used at your event so less waste has to be separated.** For example, people are more likely to separate their waste when there are only two types of waste streams to take into account.
- Assign one or more persons to a Green Team to help attendees in separating their waste correctly, while educating them on the importance of waste separation.** For example, ask enthusiastic students or other volunteers to assist you.



WASTE

WASTE REDUCTION

- Determine all potential sources of waste and take action to minimize the waste produced by your event.**
- Prior to the event, anticipate which products can be sold, reused or donated after the event.** For example, make arrangements with suppliers about the return of unused products.
- Collaborate with third parties, such as suppliers and exhibitors, that have implemented waste reduction policies into their day-to-day operations.**
- Reuse products as much as possible and otherwise, recycle materials as much as possible.**

HOW TO MAKE IT VISIBLE?

- Show the positive environmental impact that results from separating waste by placing informative signs at collection points.**



COMMUNICATION & EVENT MATERIALS

AIM FOR A PAPERLESS EVENT

- Communicate via email, a website or an (event) app.**
- Use the monitor screens in the university buildings to show the program and other information at the event itself.**
- Use electronic advertising and promotions.** For example, promote your event via social media, news websites and mobile applications.
- Use a QR code to provide information to attendees.**
- Use a QR code as a check-in system for attendees.**
- Use an electronic registration system (RSVP).**
- Collect post-event feedback through online surveys.**
- Distribute materials such as presentations, PowerPoints and brochures, electronically.**
- Avoid the use of paper flip charts.** For example, make use of PowerPoints, whiteboards or blackboards when presenting.

IF PRINTING IS NECESSARY

- Make sure you use sustainable ink when printing.** For example, use vegetable or soy-based ink instead of traditional ink.
- Use a font that requires less ink.** For example, Ecofont saves 50 percent ink.
- Use recycled and certified paper that is not glossy or colorful.**
- Use reusable print materials.** For example, avoid placing dates or one-time slogans on printed materials.
- Reduce the amount of paper needed by printing on both sides of the paper and by using relatively small fonts.**

GOODY BAGS, GIVEAWAYS & EVENT-RELATED MERCHANDISE

- Limit the use of goodie bags and giveaways where possible.**
- Encourage attendees to bring their own materials, such as pens and notebooks.**
- Ensure that the goodie bags are made from reusable material.**
- Guarantee that giveaways are reusable and sustainable.** For example, give out a reusable coffee cup or a Doppoer.
- Ensure that giveaways are experienced-based rather than physical items.** For example, provide a voucher for an activity rather than a physical object.



COMMUNICATION & EVENT MATERIALS

DECORATIONS & FURNITURE

- Minimize the use of excessive decorations.**
- Ensure decorations are made from sustainable materials.** For example, use soy-based candles instead of wax candles.
- Anticipate pre-event what you will do with your decorations post-event: reuse, donate, recycle or compost.**
- Borrow or rent decorations and furniture as much as possible.** For example, borrow potted plants for decorations instead of purchasing cut flowers.
- Buy second hand decorations and furniture if needed.**
- Avoid environmentally harmful activities such as balloon releases, spraying of confetti, or other actions that will waste resources or produce litter.**

OTHER

- Ensure that name badges are collected post-event so that they can be reused at future events.**
- Collaborate with material suppliers that implement sustainable practices in their day-to-day operations.**
- Make sure to use environmentally friendly cleaning products at the event.**
- Provide attendees with a checklist of what to bring to the event.**

HOW TO MAKE IT VISIBLE?

- Inform attendees about sustainable measures that were taken.** For example, state on your website that you aim for a paperless event or what will happen with the decorations that you used.
- Provide information on sustainability at places where attendees are receptive to information, such as the toilet.**



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