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Bachelor's degree in Architecture and Urbanism

SOUNDSCAPES AND SUSTAINABILITY:  
EXPLORING THE ENVIRONMENTAL IMPACTS OF  
LARGE MUSIC FESTIVALS

MASTER'S IN SUSTAINABLE URBANISM AND TERRITORIAL PLANNING

NOVA University Lisbon

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**Soundscapes and sustainability: Exploring the environmental impacts of large music festivals.**

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*In memory of my grandmother,  
who never allowed me to stop believing.*



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*"Life without music is only error, exhaustion, exile..."*

*(Friedrich Nietzsche)*



## ABSTRACT

Music festivals have experienced remarkable growth in quantity and popularity in recent years, attracting thousands of people to these events and inevitably triggering impacts on urban dynamics. Despite the economic, social, and cultural benefits provided, we cannot ignore the adversities that may arise on various scales, such as traffic congestion, waste management challenges, energy consumption, and greenhouse gas emissions. In light of this, this study focuses on analyzing the largest music festivals of today from an environmental responsibility perspective. The purpose is to comprehensively map the ecological impacts generated, understand how they affect the audience's experience, examine their management and certification systems, and assess their commitment to society and the environment. Through bibliographic research, we sought to observe the intersections between music festivals and sustainability. Initially, 136 festivals on a global scale were selected, and a subset of the top 35 rankings was analyzed, allowing for a closer examination of sustainability practices, or their absence. The Rock in Rio (Brazil), Rock in Rio - Lisbon (Portugal), Sziget (Hungary), Leeds Festival (United Kingdom), and Download Festival (England) were chosen as case studies. Additionally, the results of a survey with 209 respondents are presented to provide a more comprehensive understanding of the public's perspective. The results reveal gaps in information disclosure, as data provided by music festivals are often inadequate, making it challenging to assess sustainable development progress. Furthermore, the lack of a clear and objective standard for disclosing this information complicates the analysis of the efforts made by each event. While some music festivals have adopted measures to reduce environmental impacts, there is uncertainty about the actual effectiveness of their actions, as the promotion of a "green" status can be used as a marketing strategy. To effectively recognize ecologically responsible practices adopted by music festivals, this study emphasizes the importance of sustainability certifications, points to the need for substantial changes in the management and monitoring processes of these events, and underscores their role as agents of transformation and education in society.

**Keywords:** music festivals, sustainability, environmental impacts, green festivals



## RESUMO

Os festivais de música têm tido nos últimos anos, um crescimento notável em quantidade e popularidade, e a atração de milhares de pessoas a esses eventos tende a desencadear impactos nas dinâmicas urbanas. Apesar dos benefícios económicos, sociais e culturais proporcionados, não se deve ignorar as adversidades que podem surgir a diferentes escalas, como congestionamentos, desafios na gestão de resíduos, consumo energético e emissões de gases de efeito de estufa. Face ao exposto, este estudo concentra-se em analisar os maiores festivais de música da atualidade sob a ótica da responsabilidade ambiental. O propósito é mapear de forma abrangente os impactos ecológicos gerados, compreender como estes afetam a experiência do público, examinar os seus sistemas de gestão e certificação e verificar o seu comprometimento com a sociedade e o ambiente. Através de pesquisa bibliográfica procurou-se observar as interseções entre festivais de música e sustentabilidade. Inicialmente, foram selecionados 136 festivais à escala global e realizado uma seleção dos mais significativos resultando nas 35 primeiras posições do ranking, o que permitiu uma análise mais aproximada das práticas de sustentabilidade, ou ausência das mesmas. Foram selecionados como caso de estudo específicos o Rock in Rio (Brasil), Rock in Rio - Lisboa (Portugal), Sziget (Húngria), Leeds Festival (Reino Unido) e o Download Festival (Inglaterra). Além disso, são apresentados os resultados de uma investigação realizada com 209 respondentes, a fim de proporcionar uma compreensão mais abrangente sobre a perspetiva do público. Os resultados revelam lacunas na divulgação de informações pelas entidades gestoras dos festivais de música, que muitas vezes, são insuficientes e dificultam a avaliação do impacto e sustentabilidade dos mesmos. Além disso, a falta de um padrão claro e objetivo para a divulgação dessas informações aumenta a complexidade de análise dos esforços realizados por cada evento. Alguns festivais de música têm vindo a adotar medidas para reduzir impactos ambientais, mas permanece a incerteza sobre a eficácia real de suas ações, já que a promoção do status "verde" pode ser utilizada como estratégia de marketing. Para reconhecimento efetivo das práticas ecologicamente responsáveis adotadas por festivais de música, este estudo destaca a importância das certificações de sustentabilidade, aponta para a necessidade de alterações substanciais nos processos de gestão e monitorização desses eventos, além de destacar o seu papel como agentes de transformação e educação da sociedade.

**Palavras-chave:** festivais de música, sustentabilidade, impactos ambientais, festivais verdes

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## ACRONYMS

|                        |   |
|------------------------|---|
| <b>ACL</b>             | Austin City Limits  |
| <b>ADE</b>             | Amsterdam Dance Event   |
| <b>AGF</b>             | A Greener Future  |
| <b>APCER</b>           | Portuguese Association for Certification  |
| <b>BNQ</b>             | Bureau de Normalization du Québec   |
| <b>BRE</b>             | Building Research Establishment   |
| <b>BREEAM</b>          | Building Research Establishment Environmental Assessment Method                 |
| <b>CC</b>              | Creative Climate  |
| <b>CH<sub>4</sub></b>  | Methane   |
| <b>CMA</b>             | Country Music Association   |
| <b>CO</b>              | Carbon monoxides  |
| <b>CO<sub>2</sub></b>  | Carbon dioxide  |
| <b>CO<sub>2</sub>e</b> | Amount of greenhouse gasses in equivalent terms of the amount of carbon dioxide |
| <b>EDC</b>             | Electric Daisy Carnival   |
| <b>EIC</b>             | Events Industry Council   |
| <b>GDCF</b>            | Green Deal Circular Festival  |
| <b>GHG</b>             | Greenhouse Gas  |
| <b>GSTC</b>            | Global Sustainable Tourism Council  |
| <b>ISO</b>             | International Organization for Standardization                                  |

|                       |   |
|-----------------------|---|
| <b>LEED</b>           | Leadership in Energy and Environmental Design |
| <b>NO<sub>x</sub></b> | Nitrogen oxides                               |
| <b>RiR</b>            | Rock in Rio                                   |
| <b>SCC</b>            | Standards Council of Canada                   |
| <b>SDG</b>            | Sustainable Development Goal (UN)             |
| <b>SO<sub>x</sub></b> | Sulfur oxides                                 |
| <b>TBL</b>            | Triple Bottom Line                            |
| <b>USGBC</b>          | U.S. Green Building Council                   |
| <b>WTO</b>            | World Trade Organization                      |

## INTRODUCTION

Music festivals are events that attract millions of people worldwide, celebrating values, beliefs, identity, status, and cultural connections in communities, thus representing a dynamic element of socio-cultural structures around the world. These festivals offer a unique experience that combines music, culture, and entertainment (Zifkos, 2015). Over the past two decades, there has been a growth in the number and popularity of festivals, making them important drivers of promotion and agents of change for established cities and regions, as well as contributing to the rise of underdeveloped or stagnant rural areas, particularly in terms of tourism interest, revitalization, and economic restructuring (Giurgea et al., 2023; Cudny, 2014; V. Pavlukovic et al., 2017, Mair and Laing, 2012; Smith et al., 2022). Festivals go far beyond gathering and manifesting culture in a space with music and audiences; they involve creating sonic landscapes, unique atmospheres, identity, memories, community bonds, and experiences that represent a significant socio-cultural dynamism, preserving beliefs, identities, status, values, and connections, fostering creativity, innovation, knowledge, and human interaction (Arantes and Cavalcanti, 2021; Borges et al., 2021; Smith et al., 2022).

Despite the positive social, economic, and cultural contributions that music festivals provide to the communities where they take place, their dimensions inevitably result in adverse effects on multiple scales. Human activities in general have significant impacts on environmental resources, and when thousands of people gather at music festivals, this outcome is no different. The repercussions include emissions of gases from transportation, fuel use, energy consumption, noise pollution, waste generation, water use, and damage to the event site and its surroundings (Giurgea et al., 2023; Mair and Laing, 2012). One of the most urgent issues to address is carbon emissions associated with these events. The need for transportation for artists and the audience, as well as the lighting, sound, and stage systems, demand substantial amounts of energy, often derived from non-renewable sources. Another critical aspect is waste management, as festivals generate enormous amounts of waste, including packaging, plastic cups, and food leftovers, often improperly disposed of, polluting the local environment and contributing to ecosystem degradation. Water is also consumed in large quantities, whether for restroom facilities, drinking fountains, cleaning, or kitchen operations. Furthermore, biodiversity can be affected when festivals take place in natural areas due to the construction of temporary infrastructure, noise, lighting, and crowds, which can disturb local wildlife and damage ecosystems.

Tourism is a highly polluting industry, destructive of space, indigenous culture, and often serves as a conduit for land and landscape speculation (Sarmiento, 2007). Maintaining and promoting sustainable events is an urgent matter so that this duality of positive and negative consequences can find an ideal balance, enabling not only the advancement of cities and the enjoyment of the public but also the preservation of the planet. Without proper consideration of these impacts, all immediate gains can become long-term disasters (Larasti, 2019; Holmes, Hughes, Mair & Carlsen, 2015, 82-85). Festivals, at their core, resemble ephemeral cities, but they differ in their construction and dismantling within weeks. By default, this process is unsustainable and requires a specific approach to sustainability (Bennett et al., 2014). Currently, the global landscape is marked by growing awareness of the urgency of sustainable practices and the need to preserve the planet. In this context, analyzing the relationship between major music festivals and their environmental responsibility becomes relevant, as they can no longer be perceived as isolated events, as they play a significant role in contemporary culture and have the capacity to influence thousands of people.

Given the magnitude of the impacts generated by music festivals, sustainable event management guidelines and sustainability certifications emerge as invaluable tools for planning, monitoring, and evaluating the level of commitment of these events to social and environmental responsibility. Through these mechanisms, sustainability reports are produced, documents that disclose detailed information about the practices implemented by the festival, as well as their positive and negative contributions to the surrounding environment. When made publicly and transparently available, these reports can play a substantial role in evaluating the effectiveness of adopted strategies, not only by stakeholders and researchers but also by the interested public. Furthermore, such reports can contribute to raising greater awareness and engagement in sustainability issues, encouraging more responsible and environmentally conscious practices at music festivals and, by extension, in other sectors of society.

In light of the above, this study focuses on analyzing the largest music festivals of today from the perspective of environmental responsibility. To achieve this goal, an investigation was conducted based on data provided by the organizers of these events. The purpose is not only to comprehensively map the ecological impacts generated by these festivals but also to understand how these impacts affect the audience's experience. Additionally, the study aims to assess the festivals' commitment to society and the environment in a broader context, through their initiatives to reduce negative impacts and promote awareness of environmental and social issues. In parallel, a public questionnaire was administered to understand the perspectives and needs of the audience regarding these large music festivals, as these events directly or indirectly impact local communities and the environment. The ultimate goal of this study is to evaluate the role of major music festivals in shaping collective awareness of ecological and social challenges and to understand how these events can be agents of positive change for society.

Due to the importance and relevance of the topic, recent works with similar purposes to this research have been identified (Pattiasina, 2021; Larasti, 2019; Luoma, 2018; Olivey, 2019), underscoring the significance of sustainability-related studies in a rapidly growing industry. The foundation of this content was established through extensive literature research to provide a comprehensive overview of

music festivals and their development. Reports, charts, and relevant data related to ecological engagement were analyzed. Additionally, a survey was conducted among the public to understand their perspective on the effects of music festivals on the environment. Through this multidimensional approach, this study provides an overview of music festivals in relation to sustainability issues.

This research is structured into chapters, with the first chapter serving as the introduction. The second chapter provides a theoretical framework, addressing concepts and definitions of terms such as events and festivals, music festivals, and sustainability. Subsequently, the focus shifts to the positive and negative impacts of music festivals on urban dynamics and contextualizes some of the main sustainability management systems and certifications. The third chapter describes, in nine steps, the methodology used to conceive the entire study. The fourth chapter consists of the results obtained through comprehensive data collection from 136 globally-reaching music festivals and an approximate evaluation of the top 35 festivals in the established ranking. Additionally, selected music festivals, Rock in Rio (Brazil), Rock in Rio - Lisbon (Portugal), Sziget (Hungary), Leeds Festival (United Kingdom), and Download Festival (England), are presented as case studies, and a survey conducted among a diverse audience is included to incorporate a more humanized perspective on major music festivals. The fifth chapter reflects comprehensively on the information and data presented in the preceding chapters, and the sixth chapter presents the conclusion, limitations encountered during this research, and final considerations.



## 2.1 Origins and definitions

### 2.1.1 Events and festivals

Etymology reveals that Latin had two terms for festive events: "festum," which denotes public joy, and "feria," which refers to "the absence of work in honor of the gods." In literature, these words are found in the plural form, "festa" and "feriae," indicating that festivals lasted for more than one day with various events. In classical Latin, these two terms are synonymous, and both types of festivities blend. "Feria" gave rise to words that refer to markets and commercial production exhibitions, such as "feira" in Portuguese, "feria" in Spanish, "fiera" in Italian, "feire" in Old French, and then "foire," and "faire" in Old English, and then "fair." Other meanings and different segments of festivals derive from these same two terms, such as "fiesta" in Spanish for knightly combats, "festa" in Latin for sacred offerings, "festa" in Roman for games, or "festa" in Italian and "fête" in French for birthday celebrations (Falassi, 1987).

One of the earliest recorded references to the word "festival" can be found in a work by the Roman poet Virgil titled "Georgics," written in the 1st century BC. In this work, Virgil uses the word "festum" to refer to celebrations in honor of the deities (Harper, 2017). The term "festival" was first recorded in Portuguese in the 16th century, with the meaning of "solemn celebration" or "gathering of people" on the occasion of a public solemnity (Houaiss, A., Vila, M. S., 2009).

Collective celebrations have been a part of human society's history since time immemorial and were present in ancient cultures such as those in South America, India, Egypt and Ancient Greece, among others (Cudny, 2014). Some festivals emerged hundreds of years ago and continue to persist, like the Gokh Chin or Chrysanthemum Festival of Xiaolan, in the southern province of Guangdong, China, which has survived for approximately 7 or 8 centuries and managed to adapt to changes in Chinese politics and socioeconomics. It has also become one of the country's major cultural attractions. It's worth noting that the event occurs once every 60 years, making attendance a "once-in-a-lifetime opportunity" (Sofield et al., 1998).

In Ancient Greece, celebrations had a religious character with solemnity dedicated to the gods, including sports competitions such as athletics, torch races, and wrestling as part of the festivities. These celebrations encompassed processions, parades, feasts, theater, music, dances, songs, banquets, beverages, games, and entertainment. In Ancient Rome, the traditions of worshipping the gods were also common, but with the involvement of Roman emperors to secure their positions. In the Middle Ages, under the influence of the church's power, celebrations became extremely important for the culture and education of civilizations. However, there was a significant reduction in their purpose for fun and entertainment (Arantes and Cavalcanti, 2021).

In contemporary society, events in general are seen as excellent strategies to bring people together, enable direct relationships, and strengthen connections (Ranzan, 2015). The literature acknowledges various typologies of events with specific objectives and characteristics, as can be observed in Table 2.1 (Andrews and Leopold, 2013).

Table 2.1 Broadening event terminology (Andrews and Leopold, 2013).

| Terminology | Explanation   |
|-------------|---|
| Spectacle   | a visually striking performance or display; an event or scene regarded in terms of its visual impact  |
| Ritual      | a religious or solemn ceremony consisting of a series of actions performed according to a prescribed order (A ritual does not need to be solemn)  |
| Festival    | a day or period of celebration, typically for religious reasons; an organized series of concerts, plays or films, typically one held annually in the same place   |
| Ceremony    | a formal religious or public occasion, especially one celebrating a particular event, achievement or anniversary; the ritual observances and procedures required or performed at grand and formal occasions                         |
| Carnival    | an annual festival, typically during the week before Lent in Roman Catholic countries, involving processions, music, dancing and the use of masquerade; inversion (a carnival can also be encompass the suspension of social norms) |
| Parade      | a public procession, especially one celebrating a special day or event  |
| Procession  | a number of people or vehicles moving forward in a orderly fashion, especially as part of a ceremony  |
| Celebration | the action of celebrating an important day or event   |

An event can be interpreted as a combination of overlapping components that occur in specific locations and encompass a diverse audience with different ages, backgrounds, interests, cultural and social aspects, organizers, and commercial practices. These complex interactions among various elements influence their planning, structuring, and execution, working mutually to shape the experiences and impacts of events. Figure 2.1 illustrates three main components and their sub-elements that contribute to the development of an event, regardless of its purpose. Therefore, an event can be defined

as something that occurs, and the word can be used to indicate numerous activities, even without specific reasons or justifications (Andrews and Leopold, 2013).

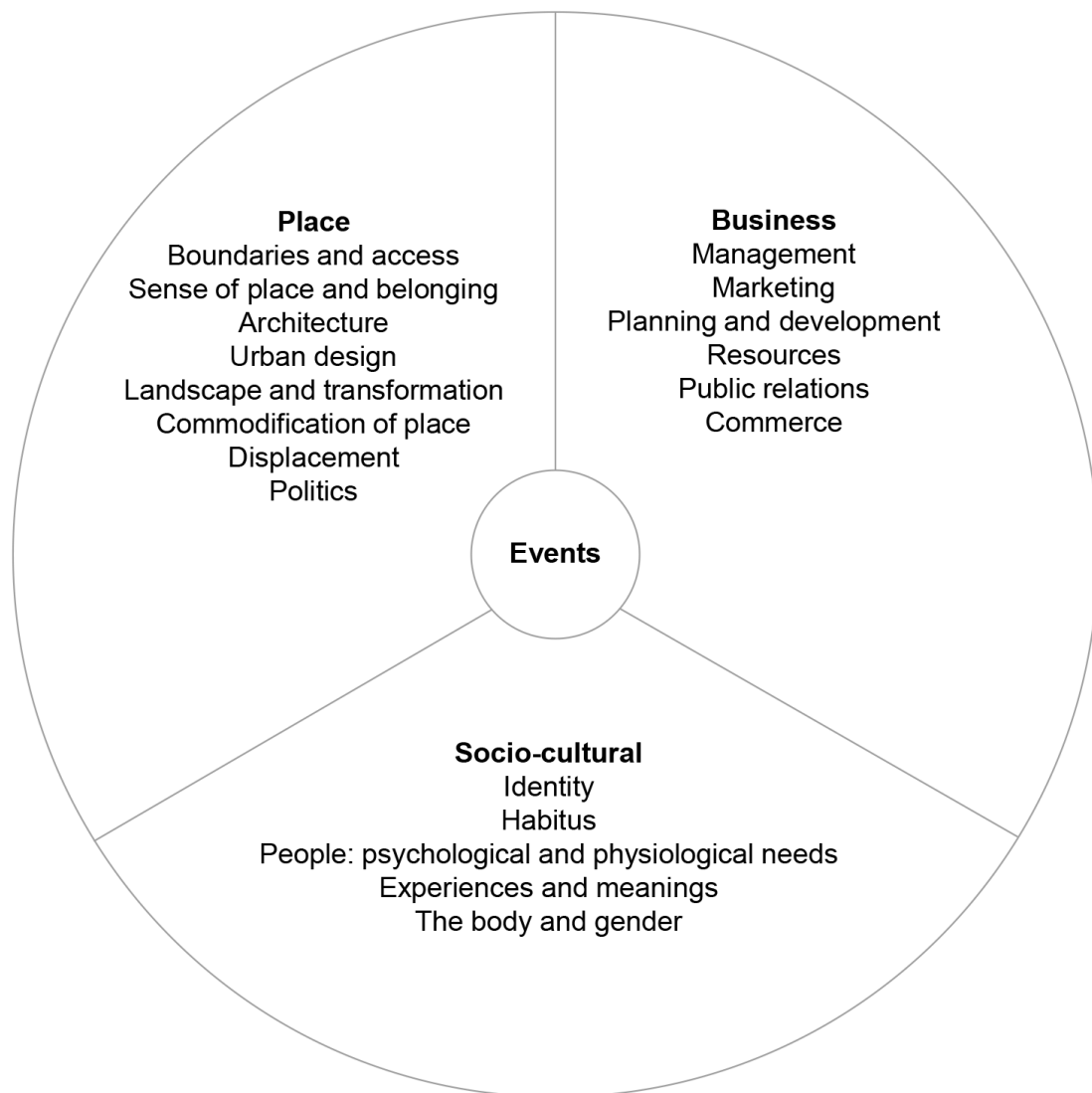


Figure 2.1 The main features of the studies of events (Andrews and Leopold, 2013).

Various definitions for the concept of a festival have been elaborated by different academic disciplines over time; however, these discussions are more theoretical than practical. For example, festivals can be categorized as urban or rural, whereas rural festivals, supposedly older, have an agrarian nature centered around fertility rites, harvest, and abundance. In contrast, urban ones tend to be more recent and celebrate prosperity in a more contemporary fashion (Falassi, 1987).

A coherent and precise definition of the term "festival" is essential for their identification. To achieve this, Figure 2.2 presents common aspects of various events. Concerning social characteristics, festivals enable the consolidation of communities, the expansion of social capital, the development of

interpersonal relationships, the enrichment of human culture, entertainment, and an escape from routine. Additionally, it observes organizational elements such as periodicity, theme, physical spaces, schedules, and the presence or absence of competitive activities (Cudny, 2014).

According to Cudny, the definition of a festival is:

"...a festival is an organized socio-spatial phenomenon that is taking place at a designated time – outside the everyday routine – increasing the overall volume of social capital and celebrating selected elements of tangible and intangible culture." (2014, p.643)

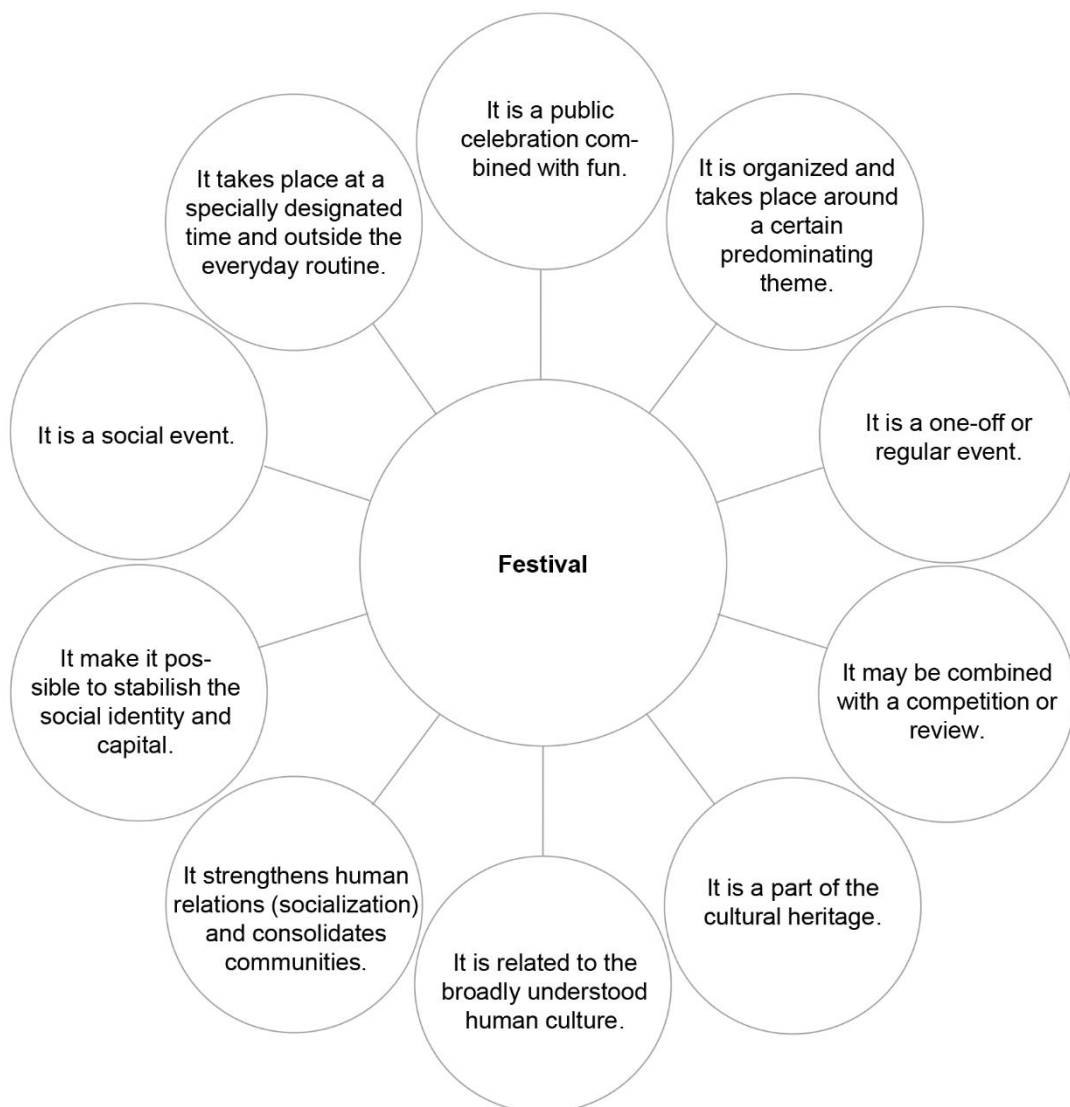


Figure 2.2 The elements of a festival (Cudny, 2014).

In various countries, festivals of diverse types, locations, and participants are held annually, enabling a holistic experience beyond musical demand. These festivals involve collective experiences and aesthetic appreciation, providing settings for performances that promote social cohesion and flexibility (Borges et al., 2021; Ballantyne et al., 2014).

Music festivals fall within the category of festivals and differ from traditional concerts by offering audiences a diverse program (featuring a specific genre or a mix of styles) and including activities beyond musical performances. These additional activities may include thematic workshops, commerce, sensory experiences, entertainment, exhibition spaces, and visual arts (Andrews and Leopold, 2013; Mair and Laing, 2012; Borges et al., 2021).

Despite the widespread knowledge of music's social, physical, emotional, and cognitive benefits, there is a gap in the literature regarding these benefits in the context of music festivals. Scholars suggest that participation in these events contributes to improvements in psychosocial and spiritual aspects, fosters a sense of place and belonging, encourages active social participation, and promotes a feeling of belonging, being needed, and valued. Each of these aspects contributes to achieving satisfaction and happiness, which not only enhances the quality of life but also plays a role in preventing various health issues. Therefore, participation in music festivals significantly benefits society (Packer and Ballantyne, 2011; Ballantyne et al., 2014).

### **2.1.2 Music festivals**

Accounts in the history of the early festivals where music was the primary attraction date back to 582 BC in Ancient Greece. Every eight years, the Kitharodic Contest took place, a musical competition where participants sang and played an instrument called the kithara in honor of the deity Apollo, the god of art, beauty, poetry, and more. After the First Sacred War (595-585 BC), the event began occurring at intervals of four years, always in the year preceding the Olympic Games, at the end of August and the beginning of September, lasting for five consecutive days. It was officially called the Pythian Games. Following the Second Sacred War (449-448 BC) and due to increased demand and popularity, the Pythian Games started including other musical instruments, different art forms such as dance and poetry, and athletic competitions. Artistic contests took place in the theater of Delphi, which could accommodate 5,000 spectators, while physical contests occurred in the Stadium with an audience of 7,000 people. The games were terminated in 394 AD by the Roman Emperor Theodosius I to establish the dominance of Christianity in the empire (Paléologou, 2017).

In the Middle Ages, urban ceremonies of various forms and purposes took place, ranging from weddings to the triumphant entrances of rulers into cities, aimed at reinforcing the hierarchical order and fostering a sense of community among spectators. These events often offered rare opportunities to observe interactions between different social strata (Hanawalt and Reyerson, 1994). They primarily served religious, commercial, and social interests, but, much like in Ancient Greece, they also facilitated some games and competitions. The dissemination of music and the arts was not the primary aim of

these gatherings; however, they were part of the occasion, mainly through the artistic class of minstrels, who provided entertainment by adding music to verses, poems, folklore, stories, and even social critiques. Many of these festivities occurred in spring or summer, when the weather was favorable for outdoor gatherings (Davidson, 2007).

Music festivals, as such, began in Europe in the 18th century through sporadic celebrations organized by composers with the aim of promoting their works (Gerber, 1999). The 19th century marked a period of transformation and progress driven by industrial development and significant technological advancements in the transportation sector. These changes revolutionized society, resulting in increased disposable income and the emergence of a new middle class with more leisure time. As people migrated to large cities in search of opportunities and improved living conditions, new demands for leisure and culture emerged (Cudny, 2014). Consequently, the 19th century saw the emergence of festivals where music served the purpose of appreciation and entertainment. During this time, opera festivals underwent natural development, featuring multi-day performances. One prominent example is the Bayreuth Festival, conceived by the visionary composer Richard Wagner in 1876 in Germany. Its goal was to showcase Wagner's own opera works in an ideal setting (Gerber, 1999; Spotts, 1994). The Bayreuth Festspielhaus, a theater specially constructed for Wagner's operas with a seating capacity of approximately 1,920, produced a unique sound that resulted from a blend of fundamental elements of good acoustics. After the premiere of "Der Ring des Nibelungen," Wagner was inspired by the venue's acoustics and went on to create other significant works, including "Tristan und Isolde," "Die Meistersinger von Nürnberg," and "Parsifal." His grand productions significantly influenced the development of music and opera, leaving a lasting legacy to this day (Spotts, 1994).

Opera festivals continued to take place, such as the Salzburg Festival in Austria, which began in 1920, and the Aldeburgh Festival, which started in 1948 in England (Gerber, 1999). After the end of World War II in 1945, there was a widespread need to revitalize the music and arts scene (Cudny, 2014). In this context, Europe's first significant jazz festivals emerged, including the Nice Jazz Festival in 1948 and the International Jazz Festival in Paris in 1949, both in France. In the United States, several renowned jazz festivals were created, the most notable being the Newport Jazz Festival, founded in 1954 in Rhode Island (Gerber, 1999). This festival reflected tensions, social conflicts, a quest for identity, and forms of expression. The Department of State and the media began to portray the festival and its music as significant icons of freedom (Worsley, 1981).

The continued success of classical, jazz, and folk music festivals introduced rock festivals in the 1960s (Gerber, 1999), a decade marked by significant social unrest, a strong anti-war movement, and expressive cultural transformations, especially among the youth (Bennett, 2017). Some of the most famous examples include the Monterey Pop Festival in 1967 and the Woodstock Music and Arts Fair in 1969 (Gerber, 1999). The latter created a definitive landmark in the era by bringing together creative and political energies of the countercultural movement in a brief three-day spectacle celebrating "peace, love, and music." It became a symbol of the hippie movement, the quest for peace and freedom, and attained legendary status, with an audience of around 450,000 people. However, estimates by the New

York State Police suggest that over 1.5 million people were unable to reach the event due to traffic congestion on roads and highways (Bennett, 2017).

The 20th century saw an exponential increase in festivals (Cudny, 2014). This expansion occurred due to a series of factors, which can be observed in Figure 2.3.

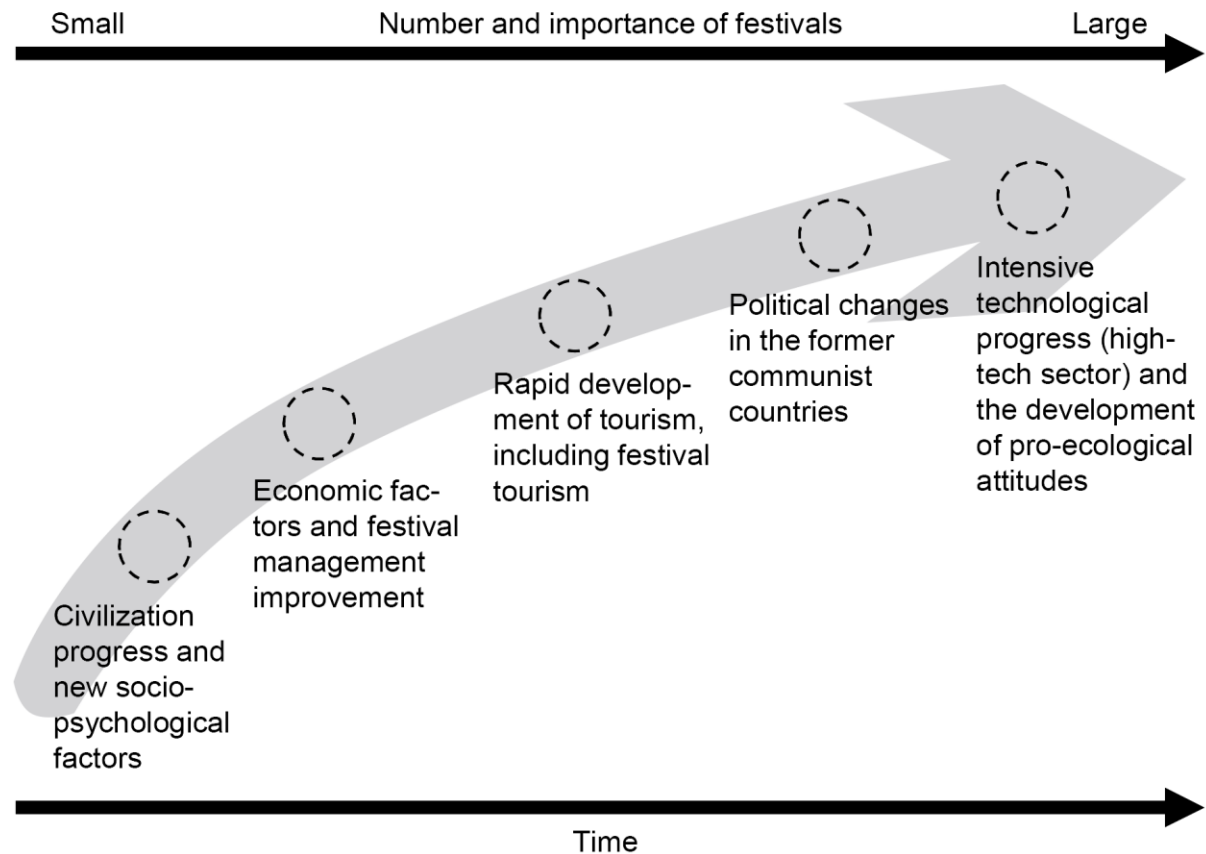


Figure 2.3 Main factors for the development of festivals in the 20th century (Cudny, 2014).

These conditions do not operate individually and in isolation; they are complementary and aggregated over time and social changes. Among the factors that influenced the increase in the number of events during this period, we can mention mass migration, which enabled the emergence of much more heterogeneous and multicultural societies, the need to escape daily routines, the search for new experiences in environments that provide different sensations from everyday life, socialization, relaxation, curiosity, group unity, contact with nature, interpersonal communication, preservation of cultural identities, and the development of cultural identities. The increase in personal income allows the audience to spend more resources on entertainment, and sponsors to invest, offering returns through excellent advertising. The growth of the cities and regions where festivals are held also contributes positively. In many of these places, cultural activities become so developed and encouraged that specific professional specializations and segments emerge for the creative industry and event organization. The quality of infrastructure and amenities offered during festivals can also be considered elements that generate public interest. The rapid expansion of tourism, especially cultural tourism, which values the

appreciation of other people and their different forms of expression, attracts larger audiences interested in activities that mix culture, leisure, and entertainment. Political factors and socio-economic transformations begin to encompass new educational, cultural, and leisure activities and provide access to government programs that finance and encourage culture. The improvement of transportation methods and the development of road infrastructure facilitate the movement of the public. At the same time, digital technologies play a role in advertising, information distribution, exchange of experiences among people, ticket buying and selling, and also provide direct dialogue with the public. Aspects with greater environmental responsibility gain strength through the promotion of more sustainable attitudes and ideologies in contemporary societies (Cudny, 2014).

The subsequent years, up to the present date, are characterized by a society where culture is plural and increasingly segmented. Contemporary festivals multiply as a response to this diversity, globalization, and mobility, promoting identity, community, and a sense of belonging (Bennett et al., 2014).

In 2020, the negative impacts of COVID-19 on the music industry were evident through the cancellation of numerous shows, festivals, tours, and performances. There are still many uncertainties about the long-term consequences of the pandemic, especially regarding the frequency of the audience at these events, as stricter rules regarding social distancing and increased costs may be imposed. Alternatively, digital tools, immersive technologies, and virtual realities begin to showcase their potential (Khlystova et al., 2022). Although technological advancements have increased the popularity of live streaming shows and enabled the download and sharing of countless songs, the constant increase in the popularity of live experiences should be considered. The research "Why go to pop concerts? The motivations behind live music attendance" reveals that participants want to "be there," be part of something unique while sharing the experience with like-minded people. It also suggests that the values attributed to tickets are of little consideration, indicating that the live experience offers experiences that the audience is willing to pay for (Brown and Knox, 2017). Globalization, the democratization of various musical genres, and the enthusiasm for large festivals, both from the public and sponsors, indicate that this phenomenon will continue to develop (Gerber, 1999).

### **2.1.3 Sustainability**

It is believed that the term "sustainability" was coined about 300 years ago by the miner and forest engineer Von Carlowitz, who highlighted the challenges of resource extraction at a rate that allowed these resources to be regenerated by nature. The contemporary expression of sustainability emerged when economists, social scientists, and ecologists realized that physical and social limits should be set for economic growth. The origins of current discussions about sustainability can also be traced back to the late 1960s when experts understood the impacts of economic activities on the biosphere. As a result of the "non-sustainable" lifestyles of people, it was recognized that there would be a future crisis where humanity would face serious problems and collapse (Zifkos, 2015).

A widely accepted and used concept of sustainability within the scientific community states that humanity needs to develop in a way that meets the needs of the present without compromising the ability of future generations to meet their own needs. It also involves limiting resource extraction and utilization to allow the biosphere to regenerate. Achieving sustainability does not imply a fixed state of harmony but rather a process of change in which resource exploitation, investment direction, technological development, and institutional changes are needed in both the present and the future. Achieving sustainability will always depend, above all, on public policies. The sustainability ideal has three main dimensions: environmental, economic, and social, also conceptualized by Elkington in 1994 (2004) as the "Triple Bottom Line" or TBL. Sustainability encompasses everything that contributes to the balanced persistence of three types of relationships: (i) between humanity and the environment, (ii) between the present generation and future generations, and (iii) within coexisting generations (WCED, 1987). Some environmentalists define sustainability as "the art of longevity" and argue that its philosophy implies that it should connect us with life, with others, and with future generations (Zifkos, 2015).

No single definition that can be considered correct, as the concept itself is constantly evolving due to changes in the dynamics of society and interpretations from various fields such as politics, education, health, and economics (Zifkos, 2015). Amidst the various definitions of the term sustainability, a common need is evident: to provide means of subsistence and opportunities for future generations as they were provided for us. Society must take responsibility for a continual pursuit of ways not only to preserve but also to develop the environment and humanity.

Issues such as resource consumption and depletion, rising energy costs, global warming, and air and water pollution have increasingly become prominent worldwide (Zifkos, 2015; Collins and Pottoglou, 2019). This has led to sustainability being widely viewed through the lens of ecosystem preservation, which is indeed crucial. However, the concept encompasses all things that constitute quality of life in the broadest sense, such as access to basic rights, nutritional status, educational level, and spiritual well-being. In other words, we can consider sustainability to be linked to the quality of life and human well-being, not just as individuals but as a society, both now and in the future. Although sustainability may seem like a global ideal, its performance and effectiveness begin at the local level (Zifkos, 2015).

One possible use of the term "sustainability" in the context of festivals is those that can sustain themselves as an organization over time. However, it is not the mere longevity of a festival that makes it sustainable; it must fulfill various roles valued by society, and in this way, events can gain support from people and communities (Zifkos, 2015). One of the critical factors in the development of festivals that has gained prominence in recent years is the green approach, which aims to promote ecological awareness (Cudny, 2014).

In the early 2000s, most studies related to festivals discussed their positive effects, such as economic impacts, community cohesion, local branding, or financial profit. In the early 2010s, as concerns about climate change and its impact became a recurring issue, sustainability ideals became a specific

research segment within the festival industry, receiving greater consideration from organizers, policy-makers, and academics (Giurgea et al., 2023; Collins and Potoglou, 2019). Sustainability, while welcomed, is seen as a distinguishing factor by the target audience. However, it cannot merely serve as an image for financial benefits; it needs to be present in all stages of the event: planning, development, and delivery. Achieving sustainability requires a combination of efforts and responsibilities from cultural managers, operational teams, sponsors, and local authorities (Giurgea et al., 2023).

A growing number of festivals are interested in promoting sustainability and addressing both the constraints and drivers for better performance. Practices should be adopted that consider factors such as the local environment and community, travel and transportation, energy consumption, sourcing, food and beverages, waste and recycling, water usage, wastewater and sewage, governance and management systems, external outreach, health and well-being, equality, diversity, and inclusion, as well as carbon footprint (AGF, 2023; Mair and Laing, 2012).

In the last decade, there has been a considerable increase in interest in understanding the impacts of events and festivals, especially among event organizers, policymakers, sponsors, and academics. The academic community increasingly uses the "Triple Bottom Line" (TBL) framework, which assesses social, economic, and environmental impacts, to evaluate events more comprehensively. However, there is still significant progress to be made in developing tools that allow for the balanced application of TBL to address environmental, human, and economic issues (Collins and Cooper, 2017).

## **2.2 Impacts on urban dynamics**

An event can take place in various types of environments, such as natural, built, or a combination of both, and regardless of the quality of its planning, it will always generate impacts on different scales, which vary depending on factors such as the event's location and dimensions, distances traveled by the audience, waste management, among many others (Holmes et al., 2015; Olivey, 2019). In the literature, various positive impacts generated by festivals are observed. However, these events also entail high resource consumption and can cause a range of social and environmental damages (Collins and Potoglou, 2019; Mair and Laing, 2012; Collins and Cooper, 2017; Han et al., 2017). The increasing demand for music festivals and the consequent intensification of tourism activities in destination regions proportionally affect local communities (Han et al., 2017). How these communities perceive these impacts can influence their receptivity, cooperation, and support for the organization of these events (Pavluković et al., 2017). Table 2.2 shows some of these positive and negative impacts identified by various authors (Han et al., 2017; Pavluković et al., 2017; Dwyer et al., 2000; Reid, 2007; Hooker et al., 2023; Holmes et al., 2015).

Table 2.2 Benefits and costs generated by festivals (author).

| Impacts                | Description   |
|------------------------|---|
| Sociocultural Benefits | <ul style="list-style-type: none"> <li>- Enrich recreational and diverse activities</li> <li>- Promote cultural exchange</li> <li>- Break down prejudices and stereotypes</li> <li>- Increase community cohesion</li> <li>- Enhance local identity pride</li> <li>- Bring vitality to the community</li> <li>- Improve the local image</li> <li>- Engage the community in festival organization</li> <li>- Recognize the importance of local participation</li> <li>- Ensure safety for visitors and residents</li> <li>- Highlight community peculiarities</li> <li>- Foster community development</li> <li>- Provide tools for urban regeneration</li> <li>- Offer a better quality of life</li> <li>- Encourage participation in outdoor activities</li> </ul> |
| Economic Benefits      | <ul style="list-style-type: none"> <li>- Stimulate tourism</li> <li>- Provide business and investment opportunities</li> <li>- Create employment opportunities</li> <li>- Enhance local infrastructure</li> <li>- Establish and upgrade service facilities</li> <li>- Drive long-term local growth</li> <li>- Attract public investments for development</li> <li>- Develop the trade and service sector</li> <li>- Increase property values</li> </ul>   |
| Sociocultural Costs    | <ul style="list-style-type: none"> <li>- Cause conflicts between local residents and visitors</li> <li>- Increase crime and vandalism rates</li> <li>- Create inconvenience for local life</li> <li>- Overuse public facilities and transportation</li> <li>- Cause overcrowding in the community</li> <li>- Intensify disruption of routines and daily life</li> <li>- Overburden recreational areas</li> <li>- Reduce community privacy</li> <li>- Increase traffic congestion on urban roads</li> <li>- Worsen noise pollution</li> <li>- Provoke antisocial behavior</li> <li>- Degrade a favorable tourism-established image</li> <li>- Lose traditions and customs</li> <li>- Alter community values and standards</li> </ul>                               |
| Economic Costs         | <ul style="list-style-type: none"> <li>- Raise the cost of living</li> <li>- Increase housing and rental prices</li> <li>- Cause social displacement</li> <li>- Disrupt the normal operation of establishments</li> <li>- Underutilize infrastructure</li> <li>- Create limited job opportunities</li> <li>- Increase financial burdens</li> <li>- Exploit and manipulate event themes for opportunistic commercialization</li> </ul>   |

|                     |  |
|---------------------|--|
| Environmental Costs | <ul style="list-style-type: none"> <li>- Produce unacceptable levels of waste</li> <li>- Consume energy excessively</li> <li>- Emit greenhouse gasses</li> <li>- Impact water supply and quality</li> <li>- Trigger traffic congestion</li> <li>- Lead to parking difficulties</li> <li>- Cause visual pollution and light instability</li> <li>- Result in damage to vegetation and green areas</li> <li>- Generate sound inconsistency and increased noise</li> <li>- Cause soil erosion processes</li> <li>- Disrupt the local fauna</li> </ul> |
|---------------------|--|

The impacts presented in Table 2.2 can occur at various geographical scales. The microscale pertains to the event's location or its immediate vicinity and includes benefits and costs, such as community development, waste generation, and noise. The mesoscale covers a broader region around the event, and its effects can be perceived positively through urban renewal, and negatively through traffic congestion. On the other hand, macroscale effects may encompass regional and global dimensions, such as greenhouse gas emissions, among others. In addition to physical scales, a temporal perspective can be considered, where effects can be short-term, limited to the event period and ceasing after the event's conclusion, or long-term, with consequences extending far beyond the festival's conclusion, also presented as a legacy, which, once again, can be either beneficial or detrimental to people and the planet (Holmes et al., 2015).

The following subsections will address some of the positive and negative impacts of major music festivals from a social, economic, cultural, and environmental perspective.

### **2.2.1 Positive: social, economic, and cultural dimensions**

Festivals take place all around the world and in all societies; they have a significant influence on the geographical areas where they are located and, besides being cultural, hold social and economic relevance due to their ability to boost the tourism market (Cudny, 2014; Mair and Laing, 2012; Collins and Potoglou, 2019; Borges et al., 2021; Sánchez and Hernández, 2022). In the domain of scientific research related to festivals, the assessment of economic impacts is predominant, with social and cultural effects being evaluated to a lesser extent (Robertson et al., 2009; Collins and Cooper, 2017). However, research reveals the significant influence of these events on the construction of meanings of places and their effects on society, politics, culture, and the economy (Lynch and Quinn, 2022).

Analyses of human behavior reveal an intrinsic need for self-expression, contact with others, and entertainment, making festivals even more socially relevant (Cudny, 2014). Events can be recognized as conducive to socialization, integration, networking, leisure, and escape from routine, where there are opportunities for discovery, areas for the exercise of freedom of expression and self-affirmation, providing distinct individual and collective experiences (Cudny, 2014; McKay, 2015). Consequently, these

events have become highly appreciated by their audience, as the lived emotions and experiences reflect, to a greater or lesser extent, their identity, interpersonal relationships, perceptions, and daily life (Bennet et al., 2014). The social panorama of a festival involves the audience, their interpersonal relationships and interaction with the space, motivations and interests, as well as the communities in its vicinity, the inhabitants, and their attitudes towards the event and tourists (Andrews and Leopold, 2013; Cudny, 2014).

Even small-scale festivals tend to play an essential role in the progress of local communities and their economy. They promote income generation through tourism, job creation, generating a positive local image, and regeneration of crisis areas. The festival audience stimulates the local economy through ticket purchases, food and beverage consumption, rentals, services, souvenirs, transportation, and entertainment. Supporting a festival often assists a stagnant locality and the businesses based there. A considerable portion of the so-called cultural economy (directly related to the creative market) generates revenue for regions associated with festivals. Activities that require innovative solutions and ideas, and specific skills and knowledge, such as production, advertising, design, and editing, are increasingly valued (Collins and Potoglou, 2019; Cudny, 2014; Mair and Laing, 2012).

It is common for people to use the context of festivals to disseminate their identity and culture to those who visit them. In this context, festivals and tourism can be strongly associated. However, the transformation of festivals into desirable products for tourists is a recent phenomenon, creating a niche concept known as "festival tourism" (Zifkos, 2015). The increased interest in festivals has positively contributed to expanding cultural infrastructure. The demand attracts tourists, stimulates the local population, and fosters creativity. The search for a destination can be enhanced by transforming its atmosphere through culture, promotion, and consumption, which can breathe new life into the space (Cudny, 2014). The cultural sphere regards festivals as favorable agents. When combined with tourism, it positively impacts the financial flow of cities through professional activities and consumption. It also provides tools for public development policies, contributing to local recognition (Borges et al., 2021). However, there is a duality of public and political interests regarding festivals. One is related to market demands and tourism, while the other concerns the needs of the community, often receiving less attention (Robertson et al., 2009).

Many festivals are planned to achieve specific benefits such as social cohesion, local prominence, profits, and funding. However, it is easy to observe the substantial potential for inadvertently generating negative impacts on their surroundings (Zifkos, 2015). Some headlines emphasize the dimensions of waste and the resulting damage, highlighting a less favorable aspect of music festivals (Olivey, 2019).

## **2.2.2 Negative: environmental associated**

There is a recognized need to reduce greenhouse gas emissions (GHGs) to prevent anthropogenic climate changes, and various sectors of society, including the festival industry, need to commit to actions compatible with this goal. The primary processes of festivals involve audience travel, waste disposal, and electricity generation at the event venues (Larasti, 2019; Fleming et al., 2014). Estimating these emissions can be challenging, especially regarding transportation, and the literature on energy consumption at festivals is often limited in detail, providing only total fuel consumption numbers for carbon footprint calculations (Fleming et al., 2014).

The predominant negative effects of an event can be categorized (Holmes et al., 2015). However, it's important to note that these categories are often interconnected and can impact each other to varying degrees. The classes presented below were developed through a review of the literature (Fleming et al., 2014; Giurgea et al., 2023; Han et al., 2017; Collins & Cooper, 2017; Collins and Potoglou, 2019; Pavluković et al., 2017; Dwyer et al., 2000; Reid, 2007; Hooker et al., 2023; Holmes et al., 2015).

### **Crowds**

One of the primary objectives of music festivals is to attract an audience, resulting in crowds of people converging on a specific location or its vicinity, which generally creates a negative or uncomfortable sense of crowding. However, this perception can vary significantly from the perspective of local residents, the audience, organizers, artists, and event managers. Research has shown that various factors can influence the perception of crowds in areas hosting events, such as context, objectives, motivations, activities, demographic characteristics, and personal tolerance. In other words, the feeling generated is directly related to the perspectives of those who attend the event or are impacted by it (Holmes et al., 2015).

The concentration of people toward a particular space, even for a specified period, can result in ecosystem impacts such as soil trampling, especially in areas without pedestrian and vehicle mobility infrastructure, leading to soil compaction, erosion, and vegetation loss (Holmes et al., 2015). Effects on wildlife include the destruction, either total or partial, of natural habitats and food sources for various species. Animals are affected by the expansion of human activity, noise, and light (Olivey, 2019). Moreover, these mass movements tend to exceed the capacities of the road network, not only concerning public transportation but especially in terms of private vehicles, leading to traffic congestion and disruptions in daily life (Holmes et al., 2015).

Figure 2.4 illustrates some reported impacts due to crowds from music festivals; in this scenario, the temporary influx of visitors can lead to real estate speculation, changes in the daily life of the local population, and their ecosystems.

**Blick** EN | FR

Business | Airbnb providers make accommodations more expensive during the Street Parade

**Street Parade for Rich** Published: 08/11/2023 at 17:29 | Updated: 08/11/2023 at 7:25 p.m

**This place costs 2500 a night**

There are still free hotel beds in Zurich just before the Street Parade. Brazen apartment owners are still trying to use the mega event for overpriced accommodation offers.

**THE U.S. Sun** US Edition

**LIKE GARBAGE Lollapalooza is my neighbor – noise that shakes my walls is one thing but it's visitor actions in streets really stinks**

Rachel Dobkin  
Published: 10:37 ET, Jul 25 2023 | Updated: 14:46 ET, Jul 25 2023

**india**  
EducationDiary.com

**Bat Activity Gets Limited And Lessened With Loud Music Festivals**

By lednewsdesk — On Aug 8, 2023

BY JOEY FLECHAS  
UPDATED MAY 26, 2021 7:44 PM

**Miami Herald**  
Part of the McClatchy Media Network

**Ultra Music Festival reaches agreement with downtown neighbors after years of fights**

Figure 2.4 Crowd headlines (Kromer, 2023; Dobkin, 2023; India Education Diary, 2023; Flechas, 2021).

### Congestion

Congestion is directly related to the physical suitability of the event location, the number of participants, and vehicles trying to access and move around this space, and at festivals, the most significant consequences for ecosystems are caused by these movements (Holmes et al., 2015). Often, fes-

tivals occur in open spaces that are not characterized by adequate road infrastructure or public transportation networks, encouraging car usage (Olivey, 2019). In contrast, urban festivals have some sustainability advantages, such as access to public transportation networks, which facilitate the arrival and departure of the audience, reducing the carbon footprint (Marchini, 2013). However, it is important to highlight that the impacts associated with travel are a shared responsibility, meaning they are not solely the responsibility of the participants but also the organizers and suppliers (Larasti, 2019).

The transportation sector is one of the significant contributors to greenhouse gas emissions (GHG), which, in contrast to other sectors, has shown an increase in emissions over the past three decades, except for specific periods such as the 2008-2009 economic crisis and the COVID-19 crisis, where emissions decreased (EEA, 2022). There is a strong dependence on motor vehicles as the primary means of transportation, and their substantial use results in critical environmental impacts, in addition to GHG emissions, including deteriorating air quality, exacerbating traffic congestion, and a significant ecological footprint. Therefore, travel can significantly affect the overall sustainability performance of an event and needs to be planned as an essential demand by festival management (Collins & Cooper, 2017; Collins e Potoglou, 2019). Figure 2.5 illustrates some recent headlines related to traffic congestion caused by music festivals like EDC, Burning Man, and Coachella.

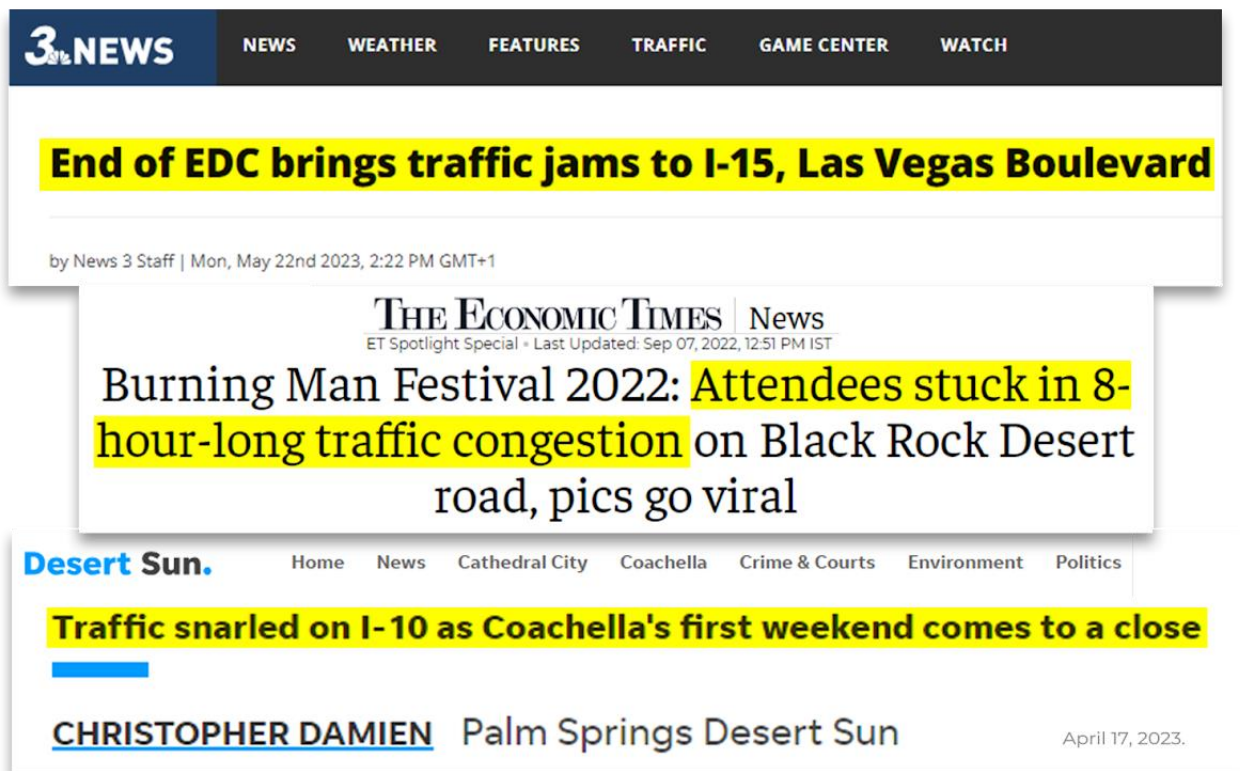


Figure 2.5 Congestion headlines (News 3, 2023; The Economic Times, 2022; Damien, 2023)

## Energy consumption

In festivals, emissions associated with energy consumption are a direct result of the use of fossil fuels (Marchini, 2013). In outdoor events, electrical energy is often supplied by diesel generators, and in some cases, photovoltaic or wind energy is used. Table 2.3 shows the primary energy demands divided into three categories: stages, commerce, and infrastructure (Fleming et al., 2014).

Table 2.3 Main energy consumption in outdoor events (adapted from Fleming et al., 2014).

| Main categories    |  | Main use   |                 |   |
|--------------------|--|--|-----------------|---|
| Energy consumption | Stages   | Lighting<br>Video<br>Audio<br>FOH: Front of house security and safety lighting<br>Guest lighting |                 |   |
|                    | Trader is-lands<br>(15-20 traders)   | Subcategories  | Food traders    | Cookers<br>Freezers<br>Fridges<br>Water heating                     |
|                    |  |  | Bars            | Refrigeration<br>Drinks dispensing<br>Audio<br>Lighting             |
|                    |  |  | Nonfood traders | Lighting<br>Cash machines<br>Mobile phone charging<br>Boiling water |
| Infraestructure    | Production spaces<br>Waste facilities<br>Staff catering<br>Tour bus power provision<br>Car park<br>Security<br>Campsite lighting |  |                 |   |

At festivals, efficient energy consumption management is crucial to ensure the success of the event and minimize its environmental impact. Stages are typically the primary energy consumers due to the lighting, sound equipment, and other technical devices used for live performances. The size and complexity of the stage vary depending on the event's scale, and energy supply systems need to be adequately sized to meet these demands. To optimize energy management, some festivals adopt renewable energy systems, such as solar panels or biofuel-powered generators, as part of their supply systems. Additionally, the strategic placement of commercial areas, with their dedicated power sources, is a common practice to ensure reliable electricity access for food, beverage, product, and service vendors. This is particularly important in large-scale festivals where commercial infrastructure plays a significant role in attendees' experiences. The festival's infrastructure encompasses all other technical needs not directly related to stages or commerce. This may include camping areas, security systems, restrooms, parking, and more. An important consideration in events and festivals is energy security,

ensuring a continuous power supply, even in the face of potential failures. In addition to primary generators, backup generators are positioned, both with excess capacity to handle sudden spikes (Fleming et al., 2014).

Figure 2.6 illustrates some news related to energy consumption and CO<sub>2</sub> emissions at large-scale events like Tomorrowland and Burning Man, which attract participants from around the world.



Figure 2.6 Energy consumption headlines (The Brussels Times, 2023; Vincent, 2023).

## Air pollution

Air pollution related to festivals primarily originates from burning fossil fuels for transportation and power generation, both at the event site and for moving equipment, supplies, and people (Figure 2.6). Emissions of gases associated with energy consumption can include nitrogen oxides (NO<sub>x</sub>), carbon monoxide and dioxide (CO and CO<sub>2</sub>), sulfur oxides (SO<sub>x</sub>), methane (CH<sub>4</sub>), and suspended smoke particles, with the first four being greenhouse gases (GHGs) directly linked to climate change effects on the planet. Air quality can be affected either immediately or in the long term, on micro or macro scales, depending on the activities conducted at the event, such as fireworks or campfires. Particles from burning materials like wood can impact air conditions in the vicinity as well as contribute to long-term effects (Holmes et al., 2015).

Carbon emissions at music festivals can typically be categorized with an approximate breakdown: 80% attributed to participant travel (excluding artist and crew travel), 13% stemming from energy consumption, and 7% originating from waste management practices (Figure 2.7) (Powerful Thinking, 2015; Larasti, 2019). While it's important to acknowledge that these figures may lack precision or could be outdated in certain contexts, they nonetheless serve as a fundamental starting point for grasping the relative significance of these impact sources. These statistics are invaluable for concert and festival organizers seeking to make informed decisions about resource allocation and sustainability initiatives.

By understanding the primary contributors to carbon emissions, event planners can implement strategies that effectively reduce the environmental footprint of music festivals, not only by focusing on energy efficiency but also by addressing travel-related emissions and waste reduction.

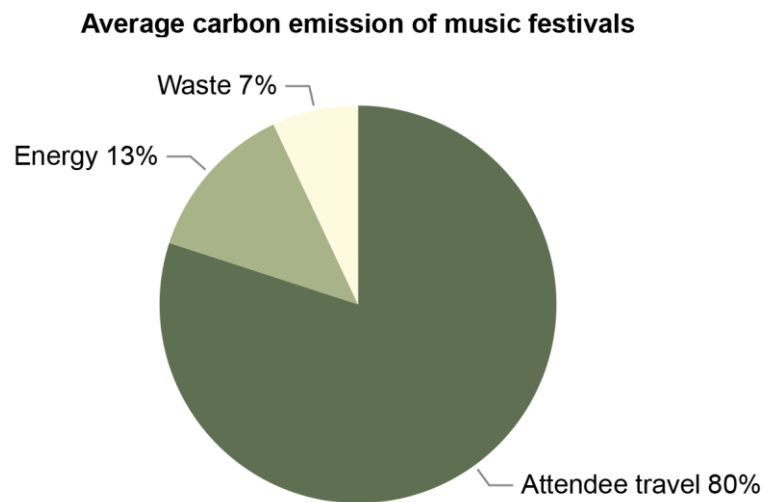


Figure 2.7 Average carbon emission of music festivals (Powerful Thinking, 2015).

Figure 2.8 offers a compelling visual representation of headlines that squarely tackle the issue of air pollution stemming from prominent music festivals and the various activities associated with them. These headlines reflect the growing public awareness and concern about the environmental consequences of large-scale music events. They serve as a stark reminder of the need for sustainable practices within the industry. Moreover, among the headlines is a notable news article shedding light on innovative solutions to minimize these adverse impacts. This specific article showcases the adoption of drones as an alternative to traditional fireworks, highlighting a forward-thinking approach that aims to reduce both air pollution and noise pollution.



Figure 2.8 Air pollution headlines (Hughes, 2015; Olson, 2023).

## Waste

Waste represents a common challenge at events, especially where there is trade in pre-packaged food and beverages and other single-use items such as glitter and hygiene product containers. Overall, the public is more likely to notice and react negatively to the accumulation of waste than to other forms of environmental degradation, especially in natural settings; the amount of litter can directly represent the space's quality (Holmes et al., 2015). It is estimated that the waste production per person per day at a festival site is around 2,8 kg (Julie' s Bicycle, 2014).

In addition to the mentioned disposable plastics, other common waste items at music festivals have significant impacts on the ecosystem, such as camping debris, food leftovers, and cigarette remnants. The quantity of abandoned tents during these events represents a growing and concerning issue for organizers. In the UK alone, around 250.000 tents are left each year (see Figure 2.9). Food waste is a recurring global challenge, ranking third on the list of major contributors to greenhouse gas emissions because its decomposition releases methane when deposited in landfills. Smoking is a popular activity at festivals, to the extent that cigarette butts are considered a trivial form of litter. However, their impacts are substantial, as their composition, which combines plastic with over four thousand chemicals (including heavy metals, ethylphenol, and nicotine), is extremely harmful to wildlife (Olivey, 2019).

The environmental impacts of waste accumulation include soil pollution or contamination, harm to rivers, and watercourses, and significant disruption to wildlife. The absence of proper waste management at festivals leads to the buildup of plastics and other non-biodegradable materials, posing a significant long-term challenge. This is because much of this waste is disposed of in landfills, which are scarce and inappropriate due to limited space availability, soil contamination risks, extended decomposition times, and the emission of harmful gases into the atmosphere, such as methane (Holmes et al., 2015).



Figure 2.9 Waste at Reading Festival 2023 (BBC News, 2023).

Figure 2.10 assembles some headlines that emphasize the issue of waste generation at music festivals, featuring renowned events like Glastonbury and Burning Man. These headlines collectively underscore the significant challenges faced by the festival industry in managing and mitigating waste. It's evident that festivals, despite their cultural and artistic contributions, often leave an indelible mark on the environment through massive waste production. The scale of these gatherings, with thousands or even hundreds of thousands of attendees, amplifies the waste management challenge exponentially. These headlines serve as a stark reminder that addressing waste is not only an environmental imperative but also a logistical and operational hurdle that event organizers must grapple with. Figure 2.10 gathers headlines about the amount of waste generated by music festivals such as Glastonbury and Burning Man, reaffirming waste as one of the biggest challenges faced by these events.



Figure 2.10 Waste headlines (Schifano, 2023; Anguiano, 2022; Gray, 2019).

## Water

Estimating the amount of water needed for large-scale events is essential for both the attendees and the resident population, significantly when access to city water is affected by festival activities. Toilet flushes represent the highest water consumption in the context of festival use. However, their availability is considered a crucial part of the attendee experience by the public and one of the success factors by the organizers. Water supply companies have already adopted digital solutions that result in data collection, which can contribute to effective planning. Digital monitoring allows for data analysis through mathematical models and artificial intelligence techniques that can identify faults and potential opportunities for consumption reduction. Identifying consumption peaks related to the number of participants, location (inside or outside of cities), season, water infrastructure conditions, and water quality

provided at the event are some of the elements that should be monitored during the festival and compared from one edition to another (Giurgea et al., 2023).

The runoff from the event area or its wastewater can contain fuels, oils, detergents, and solvents, among other liquid pollutants capable of contaminating lakes, reservoirs, oceans, watercourses, and groundwater, both locally and on a broader scale. Toxins affect water quality, human health, and ecosystems (Holmes et al., 2015). Event venues such as convention centers, stadiums, and arenas typically have drainage and wastewater management infrastructure, unlike open fields or outdoor locations, which face various water supply and disposal limitations, making them more susceptible to pollution. Furthermore, the audience attending outdoor festivals, faced with overcrowded and potentially unsanitary restrooms, often resorts to isolated spaces for urination, and when a large number of people do this, nutrients seep into groundwater, resulting in eutrophication. Eutrophication, in turn, refers to waters with high nutrient concentrations that stimulate the growth of algae and certain bacteria. The development, byproduct, and death of these organisms in water bodies can reduce light and oxygen levels, leading to the death of plants and animals and the generation of toxins that contaminate water intended for consumption by animals and humans, thereby affecting human health itself (Holmes et al., 2015). Figure 2.11 illustrates headlines related to water pollution found in rivers surrounding events, with toxic substances harmful to ecosystems and human life.

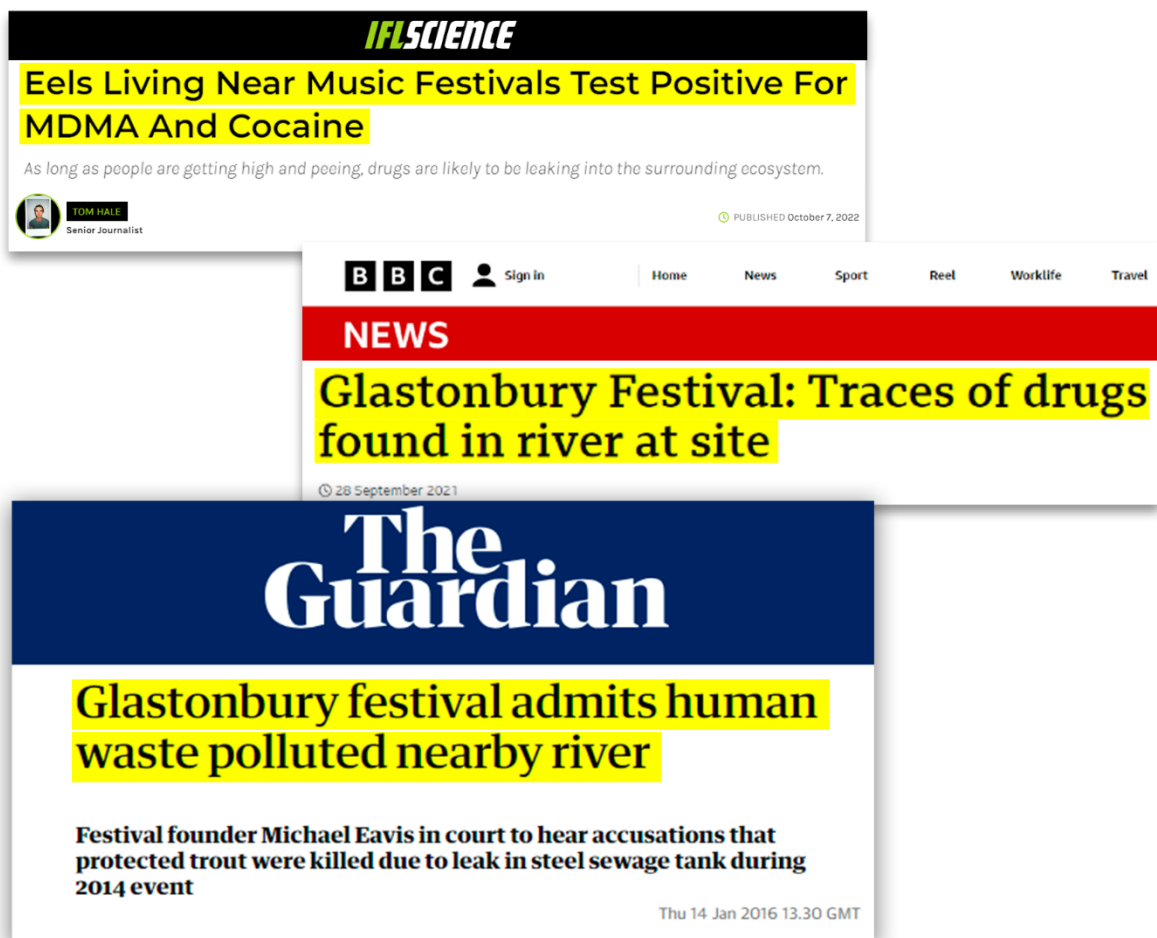


Figure 2.11 Water headlines (Hale, 2023; BBC News, 2021).

## **2.3 Management systems and events certifications**

Some music festivals are at the forefront of promoting sustainability, especially those that take place in outdoor spaces. Many of them have received national and international awards based on ecological criteria (Mair and Laing, 2012). The importance of realizing festivals with greater environmental responsibility led to the development of the International Standard ISO 20121 for Sustainable Event Management (in 2012), aimed at guiding them toward financially viable, socially responsible execution that reduces the environmental footprint. In addition, some organizations accountable for verification and certification have been established, such as A Greener Future (in 2005). Some diagnostic tools have been developed, such as The Creative Climate Tools (in 2007), which are a set of free carbon calculators developed by Julie's Bicycle for the arts and culture industries (Collins and Cooper, 2017).

Organizers and participants of festivals commonly have the understanding that "green" awards, certifications, and credentials expand the potential to attract government officials and sponsors. They are often used to enhance the brand and improve reputation through campaigns, marketing, and public relations. However, they claim that obtaining such endorsements of commitment to sustainability is not one of the primary objectives of an event (Mair and Laing, 2012).

The following subchapters will present a comprehensive overview of various sustainability management models and certifications, exploring different social and ecological responsibility approaches, both for events and festivals and for other industries. Certifications attest to the commitment to mitigate negative impacts and enhance the benefits for ecosystems and communities involved.

### **2.3.1 ISO 20121**

The marketing and organization of some festivals suggest that sustainable events result from practices such as reducing paper usage, recycling, and lowering plastics and packaging. However, guidelines like ISO 20121 recommend addressing sustainability issues more comprehensively, including mitigating environmental impacts, mobility, accessibility, inclusion, health, waste reduction, responsible supply chain management, and establishing goals for continuous improvement. The standard provides guidelines for enhancing positive impacts while identifying and reducing negative ones (ISO 20121, 2012; McKinley, 2018). ISO 20121 adopts the definition of "sustainable development" as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Additionally, it defines an "event" as a planned gathering at a specific time and location where an experience is created and/or a message is conveyed (ISO 20121, 2012).

ISO 20121 is an international standard that provides guidelines for the sustainability management of events. It was developed in 2012 and is updated every five years by the International Organization for Standardization (ISO). It is based on quality management standards like ISO 9001 and environmental management standards like ISO 14001. Management system standards like ISO 20121 challenge organizations to improve their processes and thinking, making them recognize their connection and

impact on society as well as social expectations, enabling continuous performance improvement and allowing flexibility and creativity in event execution. Commitments are required at all levels and functions to successfully implement the standard. It provides guidance outlined in four steps (Table 2.4) to achieve ongoing improvements (ISO 20121, 2012).

Table 2.4 Steps for event improvement (ISO 20121, 2012; McKinley, 2018).

| Stage        | Description   |
|--------------|---|
| Planning     | Recognize and engage the stakeholders involved in the event, define the scope and boundaries of management, establish guidelines and standards that encompass sustainability goals, strategies, activities, and responsibilities.   |
| Execution    | Implement the established guidelines in the planning phase. Actions include allocating financial resources and sustainability training, interacting with stakeholders, and ensuring that processes are documented and carried out, including supply chain management.     |
| Verification | Monitor and analyze to ensure that the system is achieving its established purposes. In this stage, activities may include data collection and analysis, reviews of human resources and the supply chain, as well as gathering and evaluating feedback from stakeholders. |
| Action       | Identify opportunities for improvement. Execute corrective actions to promote continuous improvements in the procedures established in previous phases. This stage is particularly essential for recurring events.  |

Based on an extensive set of guidelines and parameters, ISO 20121 challenges the organizational sector to identify, prioritize, and assess relevant environmental, social, and economic issues, with key examples that can be seen in Table 2.5.

Table 2.5 Major environmental, social and economic issues (ISO 20121, 2012; McKinley, 2018).

| Issues        | Description   |
|---------------|---|
| Environmental | Air pollution in the vicinity of the event, greenhouse gas emissions, waste production, contamination of bodies of water, or other damage to the ecosystem. |
| Social        | Heavy traffic and noise, well-being, safety, accessibility, rights of indigenous communities, inclusion and equity, freedom, ethical and fair trade.        |
| Economics     | Financial impacts, jobs, progress, creation of innovative products, and the realization of funding and sponsorship.   |

The importance of the issues highlighted in Table 2.5 can be influenced by the interest of stakeholders, event participants, or the local community, the competence of the organizers' coordination, the consequences of action or inaction, and applicable legislation or regulations (ISO 20121, 2012; McKinley 2018).

As a tool to aid in performance assessment and goals regarding event sustainability, ISO 20121 suggests the use of a sustainability maturity matrix (see Annex B), where individual-identified issues

should be listed and categorized, aligning them with sustainable development management principles. The organization's current position on the maturity matrix should be determined by identifying acceptable criteria, and it is always recommended to pay special attention to areas identified as weak or with growth potential. The matrix should be updated to reflect changes in circumstances and can be used in critical analysis to demonstrate progress in sustainable development to stakeholders (ISO 20121, 2012).

ISO 20121 provides a list of issues that organizations should consider (Annex C) to meet sustainable development requirements, considering various factors such as the type of event, purpose, nature of activities, and size. The event's location is also relevant, where consideration should be given to the existence of a regulatory framework related to sustainable development and socioeconomic and ecosystem characteristics. Other factors to consider are the specifics of the workforce or employees involved in the event (whether contracted or volunteers), including age, qualifications, education, and training. Additionally, it's important to assess sustainable development-related activities of other participating organizations or suppliers and the codes or requirements promoted by these organizations. Concerns of internal and external stakeholders, relevant structures, and the nature of decision-making in event management should also be taken into account (ISO 20121, 2012).

Table 2.6 Minimum criteria a sustainable event must adhere to (ISO 20121, 2012).

| Criteria       | Description  |
|----------------|--|
| Inclusion      | Action to ensure fair treatment and relevant inclusion of all parties involved in the event, regardless of ethnicity, age, religious belief, sexual orientation, color, nationality, income, ability (intellectual, physical, mental, and sensory), or any other characteristic. |
| Integrity      | Adherence to ethical values, honesty, and appropriate conduct in accordance with accepted international standards.   |
| Responsibility | Engagement with sustainable development through the assessment of the environmental, social, and economic impacts of an event, as well as the social progress and added value it offers to communities, individuals, organizations, and local authorities.                       |
| Transparency   | Transparency of the institution regarding choices and operations that affect the environment, the economy, and society, as well as the willingness to disclose them clearly, honestly, accurately, and completely, from the beginning to the end of negotiations.                |

The sustainability goals of events should be established in different relevant functions and levels, measurable, and compatible with sustainable development policies. They should consider applicable requirements to be monitored, communicated, and updated as necessary. The goals should be based on a statement of purpose and values, legal requirements, technological options, financial and operational issues, consideration of alternatives, and stakeholder input. The organization should maintain records of these objectives. When planning to achieve the objectives, the organization should determine the actions to be taken, the necessary resources, responsible parties, deadlines, and criteria for evaluating results against the purposes (ISO 20121, 2012; McKinley, 2018). Additionally, ISO 20121 contributes to the United Nations Sustainable Development Goals listed in Figure 2.12 (ISO 20121, 2023).



Figure 2.12 ISO 20121 UN Sustainable Development Goals (ISO 20121, 2023; SDGs, 2023).

It's important to note that ISO 20121 does not provide sustainability certifications for events; however, it is used as a foundation by various certifying agencies worldwide. The implementation of ISO 20121 contributes to realizing much more responsible festivals, developing a more conscious and committed professional sector, and adapting and improving social, economic, and environmental issues related to events of various sizes and functions (Ranzan, 2015).

### 2.3.2 APCER - ISO 20121 Certification

The Portuguese Association for Certification (APCER), founded in 1996, is a certification, auditing, and training company that covers various areas, including the environment, social responsibility, occupational and information security, quality, and energy, among others. APCER does not specialize in a specific niche; its services can be used by companies from different sectors, such as government institutions, private entities, and other types of organizations. In the context of events, APCER, as an independent certification company accredited by the International Organization for Standardization, uses the guidelines and standards outlined in ISO 20121 to conduct audits, verify compliance with required parameters, commitment to sustainability, and the positive legacy of events and festivals after their execution. If the evaluation results are satisfactory, the contracting company may receive its certificate. Additionally, APCER issues other certifications based on standards like ISO 9001, ISO 14001, ISO 45001, ISO 50001, and ISO 27001, among others. The certification process involves application analysis, grant audits, and follow-up audits (APCER, 2023). Approximately 58,000 certificates have been issued in more than 130 countries (APCER Certified Companies Guide 2021-2022), including the Rock in Rio and Rock in Rio Lisboa festivals (Rock in Rio, 2023).

Implementing ISO 20121 and obtaining certification based on this standard brings various significant benefits to organizations. These benefits include a more organized approach to sustainability,

performance monitoring, reduced operational costs, waste and carbon emissions management, efficient resource utilization, reduced risk of damage to the company's reputation, and increased ability to identify, correct, and prevent potential risks (APCER, 2023).

### 2.3.3 A Greener Future - Greener Festival Awards

A Greener Future (AGF), founded in 2005, is a non-profit organization that helps institutions, events, festivals, and venues worldwide become more sustainable and reduce their environmental impacts. It is also the global pioneer in certifications for green events and festivals. AGF provides training, support, and expertise, along with carbon footprint assessment and the development of offset strategies. By analyzing existing actions and operations, they develop and implement strategies, recommend sustainable solutions, and provide tools to assist in decision-making and implementing new actions. They also promote information exchange through events and networking. Their website and membership area offer guidance, tools, research, and information on positive environmental and societal actions. AGF provides a practical guide for event organizers that explores the operations involved in running an event and highlights best practices, some of which can be seen in Table 2.7 (AGF, 2023).

Table 2.7 Best practices in event execution (AGF, 2023).

| Practices          | Description   |
|--------------------|---|
| Energy efficiency  | Prioritize the use of natural lighting, energy-efficient or highly rated items, accurately determine energy requirements, conduct energy readings before, during, and after the event, and track these measurements to reduce consumption in future events.   |
| Waste minimization | Avoid printed flyers or opt for recycled paper, give preference to reusable items, and refrain from purchases that will result in waste, ensure that material access matches waste processing capabilities, store relevant documents on USB devices to reduce paper usage, and ensure that collection points are signposted and facilitate proper separation.   |
| Water conservation | Encourage the use of containers such as reusable water bottles and cups, provide free drinking water, identify and promptly repair water leaks, reduce waste through dry toilets, adjustable faucets, reduced water pressure, restrict the use of plastic glitter and disposable products, and monitor data related to water and sewage consumption.  |
| Procurement        | Implement sustainable purchasing policies, select local and environmentally responsible suppliers whenever possible, opt for rechargeable and reusable products, prioritize products from direct and organic sources, and use certified paper and wood products or materials made from recycled materials whenever possible.  |
| Communication      | Establish clear policies that are shared and approved throughout the organization, involving all stakeholders, efficiently plan through a sustainability plan where event participants can consult, annotate, and share practices with their team and service providers, conduct a rigorous post-event analysis, and communicate the results to the public, other event organizers, and involved suppliers, as well as engage the local community and consider public opinion in decision-making processes. |

AGF's certification process includes the requirement for a sustainability diagnosis that provides organizations, events, and venues with a measure of their current sustainability performance, along with recommendations for continuous improvement. The diagnosis examines a variety of topics, such as local environments and communities, travel and transportation, energy and electricity, procurement, food and beverages, waste and recycling, water usage, sewage and wastewater, governance and management systems, external outreach, health and well-being, equality, diversity, and inclusion, and carbon footprint. AGF qualifies certifications according to table 2.8, with ratings ranging across four distinct categories representing the level of event engagement in sustainability practices in the assessment year (AGF, 2023).

Table 2.8 Certified festivals in 2022 (AGF, 2023).

| Outstanding   | Highly commended  | Commended   | Improvers  |
|---|---|---|--|
| Cambridge Folk Festival (UK)<br>DGTL Festival (NL)<br>Green Gathering (UK)<br>Øya Festival (NO)<br>Paradise City (BE)<br>Pete The Monkey (FR)<br>Shambala Festival (UK)<br>We Love Green (FR) | American Express presents BST Hyde Park (UK)<br>Boom Festival (PT)<br>Dockyard Festival (NL)<br>Primavera Sound (ES)<br>Sonidos Liquidos (ES) | Bordeaux Open Air (FR)<br>De Zon (NL)<br>Elrow Town (NL)<br>Greenbelt (UK)<br>Mystic Garden (NL)<br>Pleinvrees (NL)<br>Strafwerk (NL)<br>Walden Festival (BE)<br>WECANDANCE (BE)<br>WoNDeRFeel (NL) | Bloodstock Open Air (UK)<br>Brockwell Live (UK)<br>Das Fest (DE)<br>Deer Shed (UK)<br>Jardin de las Delicias (ES)<br>Leopallooza (UK)<br>Luno presents All Points East (UK)<br>Metal Days (SL)<br>Rosendal Garden Party (SE)<br>Shindig (UK)<br>Standon Calling (UK)<br>Strawberry Fields (AU)<br>SWR3 New Pop (DE)<br>Underneath the Stars (UK)<br>Valley Fest (UK) |

### 2.3.4 Julie' s Bicycle - Creative Green Certification

The Creative Green Certification, in addition to being a sustainability certification, is a global network of innovative organizations in the arts and cultural sector, recognized for their ambition and actions regarding ecological responsibility. It has issued over 250 certificates since its inception in 2009. It provides festivals, local events, museums, galleries, and offices with a transparent, systematic, and motivating framework for achieving best practices and a space for recognition and celebration. The certification assigns ratings ranging from one to five stars based on different scores linked to the commitment, understanding, and improvement categories (Table 2.9). The assessment methodology fol-

lows international standards and practices for measurement, reporting, and environmental impact reduction. The continuous focus on carbon emissions mitigation aligns the Creative Green community with global sustainability goals (Julie' s Bicycle, 2023).

Table 2.9 Categories considered by the Creative Green Certification (Julie' s Bicycle, 2023).

| Category  | Description   |
|---|---|
| Environmental commitment<br>1 to 40 points                    | Environmental policy and action plan;<br>Corporate commitment to sustainability;<br>Communication and stakeholder engagement;<br>Environmental responsibility;<br>Policy for environmentally responsible procurement and acquisitions;<br>Team assignments and duties;<br>Creative and innovative agenda;<br>Integration with the organization's core principles.   |
| Understanding of environmental impacts<br>1 to 25 points      | Comprehensive and extensive knowledge of environmental impacts;<br>Collection and use of data to monitor progress and reduce impacts, especially concerning energy, emissions, water, waste, travel, and people.  |
| Improvement to reduce environmental impacts<br>1 to 35 points | Measurable reductions in direct environmental impacts, i.e., effects over which an organization has direct control, such as energy consumption, GHG emissions, water use, and waste generation, both in absolute terms and relative terms;<br>Actions to respond to indirect environmental impacts, i.e., effects over which an event has no direct control or limited control, such as participants' travel. |

The Creative Green Certification is part of the services provided by Julie' s Bicycle, an organization established in 2007 that, in addition to environmental certification, offers consulting and advisory programs for companies in the music sector. Current and past clients include Festival Republic, Warner Music UK, Universal Music UK, the Association of Independent Music, Shambala Festival, BRIT Awards, Askonas Holt, Village Underground, Live Nation, and many others. Their services include carbon footprint calculation, policy and strategy development, training, resource and guide production, research, network support, and event curation. The organization also collaborates with working groups to shape initiatives spanning multiple industries, such as LIVE Green Beyond Zero, Sustainability IMPALA Task Force, Vision2025, Powerful Thinking, and Music Declares Emergency (Julie' s Bicycle, 2023).

Julie' s Bicycle also offers the Creative Climate Leadership program, which empowers artists and cultural professionals to take impactful, creative, and resilient action on the climate and ecological crisis. They provide Creative Climate Tools (CC Tools), a platform designed to help the arts and culture industries measure and understand their environmental impacts. This platform allows organizations to record and measure their energy consumption, water use, waste generation, as well as track information related to travel and production materials. Based on these measurements, the tool provides results and analyses that can inform the organization's environmental strategy and priorities. Over 5.000 organizations use this tool in 50 countries worldwide. The website features numerous sustainability best practice guides explicitly designed for the music industry, offering information, tips, inspiration, and

multimedia creative resources to drive climate action based on four main steps (Table 2.10) for taking action on environmental sustainability (Julie' s Bicycle, 2023).

Table 2.10 Key steps to take on sustainability on music festivals (Julie' s Bicycle).

| Step        | Description   |
|-------------|---|
| Commit      | Organization of structures, resources, policies, and fundamental responsibilities to support and realize its initiatives.   |
| Understand  | Understanding of its impacts and definition of mechanisms to continuously measure and evaluate them.  |
| Improve     | Implementation of an action plan aimed at reducing environmental impacts.   |
| Communicate | Engagement of the team, the audience, and the suppliers; it is essential for the entire organization to participate in the process. Sharing and exchanging information and knowledge. |

### 2.3.5 BNQ - Événement Responsable Certification

Founded in 1961, the Bureau de Normalization du Québec (BNQ) is accredited by the Standards Council of Canada (SCC) as a standards development, certification, and auditing organization. It operates in various sectors, including construction, civil engineering and urban infrastructure, sustainable development, business management, protection and safety, occupational health, and agri-food. BNQ's procedures and methods comply with the International Organization for Standardization (ISO) and the World Trade Organization (WTO) rules. BNQ 9700-253, published in 2010, is a standard based on the 16 principles of Quebec's Sustainable Development Act and was developed for the responsible management of events. It arose from the industry's need to establish rules to comply with this sector's sustainable development principles. BNQ 9700-253 enables collaboration among organizers, suppliers, and participants to create events that minimize environmental impacts and maximize economic and social effects on the community (BNQ, 2023).

This standard establishes requirements based on two fundamental principles: the commitment of the event organizer and, when applicable, the audience, and the awareness and engagement of the organization and participants in projects with positive impacts. The certification's rating level is determined through a scoring system ranging from one to five, where the fifth level demonstrates higher environmental responsibility. The assessment process considers 56 performance criteria grouped into five distinct areas: supplier selection, equipment, energy and water management, waste management, food selection, and transportation options. The certification process consists of five stages: certification application, company document analysis and control visit, compliance assessment, final decision, issuance of the conformity certificate, and maintenance and renewal. The document is valid for three years from the date of issuance and requires annual audits to ensure its maintenance (BNQ, 2023).

When certified, organizers can promote their events, highlighting their commitment to sustainable development and enhancing their credibility with the public. However, it is essential to emphasize that the program does not certify a specific event but recognizes the compliance of responsible management practices by an event organizer. BNQ plays a significant role in Quebec's economy and society, directly influencing the development of sectors, workplaces, and individuals (BNQ, 2023).

### 2.3.6 Events Industry Council - Sustainable Event Standards

The Sustainable Event Standards, developed by the Events Industry Council (EIC), is a certification program designed to assist companies, organizations, and professionals in the events and meetings sector in planning and implementing sustainable and environmentally responsible practices. Event organizers can demonstrate their commitment to sustainability and environmental responsibility by adopting this certification. The Events Industry Council Sustainable Event Standards replaced the APEX/ASTM Environmentally Sustainable Meeting Standards in 2019 (Events Industry Council, 2023). There are no records of this certification associated with music festivals, but its applicability is common in other types of events such as meetings, exhibitions, conferences, and conventions.

Candidates striving for certification must furnish evidence of adherence to the criteria outlined within each standard, as outlined in Table 2.11. Certification levels are determined based on the percentage of compliance achieved and the maximum point threshold designated for each sector. This entails the bestowal of bronze certification at 50%, silver at 65%, gold at 80%, and platinum at 90% compliance (Events Industry Council, 2023). These certification tiers not only incentivize higher levels of sustainability but also provide a clear benchmark for event organizers to gauge their environmental efforts and accomplishments.

Table 2.11 Standards and evaluation criteria for obtaining certification (Events Industry Council, 2023).

| Standards                  | Assessment Criteria   |
|----------------------------|---|
| Event Organizers           | Organizational Management<br>Marketing Communication and Engagement<br>Climate Action<br>Water<br>Materials and Circular Economy<br>Supply Chain<br>Diversity, Equity, and Inclusion<br>Accessibility<br>Social Impacts |
| Accommodation              |   |
| Audiovisual and Production |   |
| Destination                |   |
| Exhibition Services        |   |
| Food and Beverage          |   |
| Integrated Property        |   |
| Venue                      |   |

### **2.3.7 EarthCheck Certified**

EarthCheck, established in 1987, is one of the leading sustainability certification, consulting, training, and software programs for the travel and tourism industry, including resorts, hotels, destinations, governments, theme parks, events, and other related organizations. The sustainability certification involves a careful process that includes engagement and commitment from all team members and stakeholders, as well as the development of a sustainability and energy efficiency policy; monitoring performance, issue identification, and assessment of indicators (energy use, water, paper, carbon emissions, chemicals, community and employee impact, waste, and others deemed necessary); data collection and documentation, implementation of the designated sustainability management system, and audit. The certification rating is updated based on its maintenance over time. As a result, an institution assessed between 1 and 4 years receives Silver Certified, between 5 and 9 years receives Gold Certified, between 10 and 14 years receives Platinum Certified, and with over 15 years of assurance, it receives Master Certified (EarthCheck, 2023).

### **2.3.8 Green Globe Certification**

Green Globe, founded in 1992, is a certification and environmental and social sustainability management system company specifically designed and developed for the tourism and travel sector, covering hotels, resorts, conference and meeting centers, restaurants, spas and health centers, cruise ships, transportation, tour companies, and other industry entities. Its primary goal is to optimize the economic impact of these businesses while reducing social and environmental impacts, promoting the incorporation of sustainable practices, investing in and supporting local communities, providing comfort and well-being to the destination, generating jobs, and favoring fair trade (Green Globe, 2023).

Green Globe standards are based on international guidelines and agreements such as the Global Sustainable Tourism Council (GSTC), Agenda 21, ISO 9001, 14001, and 19011, among others. It uses 385 indicators and 44 different criteria to assess and certify companies, with over 100 indicators aligned with the United Nations' 17 Sustainable Development Goals. The entire Green Globe Standard is reviewed and updated twice a year. Most indicators and criteria used fall under the themes of sustainable management, environmental, economic, and social aspects, and cultural heritage (Green Globe, 2023).

The process of obtaining certification is rigorous and includes an assessment of the sustainability performance of the company and its partners, document collection and evidence gathering, as well as on-site property and employee audits based on the collected evidence. By meeting the requirements, the company achieves the first level of certification, Certified Member status. By maintaining this status for five consecutive years and demonstrating ongoing efforts, it receives Gold status. After ten years, it reaches the highest level of certification, Platinum status. To maintain these statuses, members must undergo mandatory, independent on-site audits every two years and meet over 50% of the requirements annually (Green Globe, 2023).

### **2.3.9 U.S. Green Building Council - LEED Certification**

The U.S. Green Building Council (USGBC) is the developer of the Leadership in Energy and Environmental Design (LEED) certification system, which has been assessing sustainability in various types of buildings, projects, spaces, and all stages of their construction since 1998. This includes residences, industries, businesses, and institutions, as well as public spaces, renovations, and expansions of existing buildings. The primary goal of LEED is to encourage the construction and operation of energy-efficient buildings that reduce contributions to climate change and environmental impacts, promote the conservation of biodiversity, natural resources, and ecosystems, enable sustainable and regenerative material cycles, enhance individual human health and collective quality of life, and provide healthy and productive environments for building occupants (USGBC, 2023).

The LEED certification system is points-based, where projects need to meet a series of requirements in various categories such as sustainable materials and resources use, energy efficiency, waste management, water use, transportation, innovation, indoor environmental quality, and green infrastructure and location. The classification varies based on the number of points achieved, ranging from Certified (40-49 points), Silver (50-59 points), Gold (60-79 points), to Platinum (+80 points). Upon achieving the highest level of certification, the LEED Zero Carbon status can be included, characterizing buildings with net-zero carbon emissions over the course of a year (USGBC, 2023).

LEED is the most widely used green building rating system in the world, and its certification is a globally recognized symbol of sustainability achievement. It offers various benefits such as long-term operational cost reduction, improved energy efficiency, reduced carbon emissions, increased property value, creation of healthier environments for people, recognition for leadership in sustainable practices, and a direct contribution to achieving the United Nations' Sustainable Development Goals (USGBC, 2023).

### **2.3.10 BRE - BREEAM Certification**

The Building Research Establishment (BRE) has been offering the Building Research Establishment Environmental Assessment Method (BREEAM) since 1990 as an environmental assessment and certification system for both new and existing real estate assets across various building types, including residential, commercial, public, multi-residential accommodations, and even entire neighborhoods. BREEAM is used to rate and measure sustainability performance to ensure that projects meet requirements and goals and continue to improve their efficiency over time. The certification standards contribute to asset performance at all stages of the project, from conception through construction, use, and renovation, going beyond carbon emissions through a comprehensive approach to a building's lifecycle and its environmental, social, and economic performance (BRE Group, 2023).

BREEAM assessments can be applied to New Construction, Refurbishment and Fit-Out for Non-Domestic Buildings, or Refurbishment and Fit-Out for Domestic Buildings. The certification process

consists of two stages: Design and Post-Construction, with an optional Post-Occupancy stage. Each phase involves assessment and evidence collection as described in a report to grant a rating based on points earned through various aspects related to the construction, such as energy efficiency, use of natural resources, indoor environmental quality, management processes, pollution, transportation, materials, waste management, and local environmental impacts. The final result is expressed on the following rating scale: Unclassified (-30%), Pass (30%), Good (45%), Very Good (55%), Excellent (70%), and Outstanding (85%) (BRE Group, 2023).

While BREEAM is frequently applied to projects in the UK, it is widely recognized globally and adopted in various countries as a benchmark for sustainable construction. Many government agencies and public entities encourage or even require using BREEAM in sectors such as healthcare and education, demonstrating a high commitment to sustainability. By incorporating ecological criteria from the outset of a project, it becomes possible to reduce costs over the asset's lifecycle and increase its value, user satisfaction, and building vitality. This also improves corporate image and meets social responsibility requirements while mitigating risks. BREEAM offers solutions to reduce emissions, social and health impacts, and promotes circular practices, resilience, social justice, biodiversity preservation, and transparent reporting. This holistic environmental assessment approach reflects the importance of considering all dimensions of sustainability in a project or construction, which also ensures a commitment to the United Nations Sustainable Development Goals (BRE Group, 2023).

The main objective of this work is to investigate the impacts stemming from music festivals, with special attention to their effects on the environment. To achieve this purpose, the adopted methodology is outlined in the following steps:

**Step 1: Literature review**

To comprehend the significance of large music festivals in local economy, tourism, creativity, and innovation, an initial literature review was conducted. This review was based on articles published in online newspapers and academic journals covering a variety of topics, including event and festival management, tourism and hospitality management, and sustainability in events. Information was gathered from various sources, including Scopus<sup>1</sup>, Connected Papers<sup>2</sup>, Taylor & Francis Online<sup>3</sup>, and Google Scholar<sup>4</sup>, among others, by executing the following search queries: (i) festivals AND history; (ii) festivals AND origins; (iii) music AND festivals AND sustainability; (iv) festivals AND impacts; (v) music AND festivals. This step allowed for the collection of comprehensive and relevant information on the subject, serving as a starting point to identify the potential impacts of these events on the environment.

**Step 2: Identification of major event management systems and certifications**

A survey was conducted to identify the major event management systems and certifications, enabling an in-depth understanding of the practices, standards, and regulations governing the organization and execution of music festivals. This research stage revealed crucial information about how festivals are planned, managed, and assessed in terms of quality and environmental impact. This step was carried out through searches on search engines like Google, executing the following queries: (i) festivals AND certification; (ii) festivals AND green; (iii) music AND events AND sustainability AND certifications; (iv) festivals AND sustainability AND certifications; (v) green AND certifications. This process prioritized information obtained from the official pages and documents of the identified certifications.

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<sup>1</sup> Database of abstracts and citations of articles for academic journals/magazines.

<sup>2</sup> Platform that connects scientific articles.

<sup>3</sup> Journal content platform.

<sup>4</sup> Web search engine that searches scholarly literature and academic resources.

By exploring these systems, it becomes possible to identify the practices adopted by the events industry and assess the festivals' compliance with established standards and guidelines. This contributes to a deeper understanding of existing practices and offers insights into how music festivals can be planned and executed more effectively to minimize their negative impact on the environment while maximizing their benefits for the local economy and the tourism industry.

### **Step 3: Identification of the largest music festivals**

Given that the objective of this work is to understand the effects of music festivals in relation to their host locations, it was necessary to identify and list high-impact music festivals. These events were primarily located using public domain search engines like Google and Google Scholar, executing the following search queries: (i) largest AND music AND festivals; and (ii) major AND music AND events. This initial research led to the discovery of various lists available on the internet, on websites such as Billboard<sup>5</sup>, Deezer<sup>6</sup>, Music Festival Wizard<sup>7</sup>, among others. However, each list presents rankings with varying criteria, as parameters like total audience attendance, popularity, event size (in terms of area), impressions of the list's author, and number of social media followers can be considered. In other words, each list ranks events in different orders.

Due to this variation in criteria and to ensure a more precise approach, it was essential to create a new classification, where the criterion used was the size of the audience present on each day of the event. This choice was made because events with a large number of attendees in a short period tend to generate more significant impacts.

Initially, a list with more than 150 events was created. In this process, information was gathered from official sources and publicly accessible platforms, including both the total number of participants and the duration of each event, with the aim of calculating the daily average audience. It is worth noting that several events were removed from the initial list due to a lack of data on the number of participants, with some events even choosing not to disclose this information or providing only estimations. Furthermore, certain events were excluded, such as festivals that span multiple cities and lack these statistics. In total, 136 globally significant events were counted.

### **Step 4: Characterization of the largest music festivals**

Building upon the ranking established in the previous stage, a more detailed collection of information related to the events in question was initiated. Initially, this data was gathered from the official websites of each festival. However, in cases where such data was not available on the respective websites, public domain search mechanisms like Google, online newspapers, and magazines were utilized to obtain the necessary information. These data encompassed the event's location, frequency, public access type, and geographical characteristics.

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<sup>5</sup> American music magazine.

<sup>6</sup> Music streaming service.

<sup>7</sup> Online platform that serves as a go-to resource for festival enthusiasts.

Analysis of these elements provides an identification of several specificities among music festivals, such as the presence or absence of adequate infrastructure to host large-scale events and distinctions in terms of the impacts on ecosystems. It also assists in understanding the processes that occur during the event and how they integrate with the surrounding environment and the local community. Based on the provided investigation, charts have been created to visualize trends and peculiarities of the music festivals included in this study. These diagrams can be observed in Chapter 4.1.

#### **Step 5: Events selection for optimized analysis**

Due to the available time for conducting this study, given its scope, which encompasses a total of 136 major music festivals previously classified in the preceding stages, it was decided to select the first 35 events from the list to enable a more in-depth investigation and optimize the available resources. This approach allowed for a focused effort on gathering specific information related to environmental responsibility from the official platforms of the respective festivals. By limiting the number of events for this analysis, the aim was to create a more manageable dataset while maintaining representation in the sample in relation to the diversity of music festivals.

In this stage, the central objective was to compile a comprehensive set of information related to the sustainability goals and initiatives adopted by the 35 selected music festivals. More specifically, the goal was to identify events that not only embraced sustainable practices but also publicly shared their sustainability reports and possibly held recognized green certifications. The collection of this information primarily occurred through the official platforms of the selected events and their organizing companies. However, it is worth noting that in various cases, this task was not without challenges, as data often appears incomplete, scarce, or even absent.

#### **Step 6: Direct contact with music festivals**

Due to the limited availability of sustainability reports and online information, it became essential to engage in more direct communication with managers, companies, and event organizers. Communication took place through emails provided on official websites and social media platforms such as Instagram and LinkedIn. Twenty-five festivals from the top 35 positions in the ranking were selected, along with an additional five events from the bottom 100 in terms of audience size. Multiple attempts were made to establish contact for a brief interview, and the message was conveyed through a questionnaire (see Annex A) containing 11 specific questions about the use of the event's space, surrounding impacts, mobility, availability of sustainability reports, among other aspects. The acquisition of sustainability reports is of utmost importance as it enables comparisons between events and contributes to the discussion of results and insights for this study. Further information regarding this communication is described in Chapter 4.3.

#### **Step 7: Case Studies**

The search for sustainability reports focused on the top 35 festivals listed, from which four events that adopt a more transparent approach to environmental responsibility and publicly share their reports

or parts of them were selected as case studies. In addition to these, a fifth element was added as a case study because, despite ranking 73rd in the overall ranking in Annex 8.4, the festival provides data that allows for comparisons across all the years it was certified, expanding the possibilities for comprehensive analyses over consistent intervals. The collection of these reports primarily took place through the official platforms of the selected events and their organizing companies.

Sustainability reports from different events exhibit significant disparities among them, making a precise comparison across all highlighted aspects unfeasible. In this context, a more effective analysis of the impacts, and the success or failure in mitigating them, is facilitated through music festivals that provide information for multiple years, as they are more likely to present standardized data. The investigation was conducted based on the categories presented in each report, where each of these represents a fundamental aspect in the sustainability context for their respective events and allows examining their consequences in various dimensions. The case studies data can be observed in Chapter 4.4.

### **Step 8: Public survey**

Considering that attempts to establish direct communication with event organizers in Step 6 did not yield satisfactory results, it became imperative to adopt an alternative strategy to obtain valuable information for the study. In this regard, the research shifted its focus to the audience's perspective, thereby providing a broader and more diversified view of sustainability in music festivals. To achieve this goal, a questionnaire consisting of twelve closed-ended questions and one open-ended question was developed for the general public. This questionnaire was made available through the Google Forms platform and widely promoted on social media platforms such as Instagram, LinkedIn, and Twitter, with a particular focus on the audience that attends music festivals. The specified period for collecting responses was 60 days. This approach proved to be of utmost importance for obtaining comprehensive and relevant insights into the public's perception of sustainability in music festivals.

Data collection involving human subjects or confidential information followed ethical research principles, including obtaining informed consent and preserving participants' privacy. The questions and the data obtained through this questionnaire, are presented in Chapter 4.5.

### **Step 9: Discussion**

This step involves a systematic approach to analyzing the information and data obtained throughout the research. In this regard, the aim is to gain an in-depth understanding of the complexities and challenges inherent in collecting reliable information related to large-scale music festivals, despite the clear demand for such data. It is crucial to highlight the importance of exposing the difficulties and barriers encountered during the collection of this information, which reveals obstacles faced in obtaining a comprehensive view of sustainability in these events. The obtained sustainability reports are also discussed, and their analysis allows for the observation of some initiatives adopted by these events. Furthermore, the audience's perspectives regarding the impacts generated by large-scale music festivals are explored, which proves to be fundamental in assessing the effectiveness of the actions taken by these events and their influence on public awareness.

## 4. RESULTS

This chapter presents a significant set of major global music festivals, along with their geographic locations and spatial characteristics. From this selection, a subset of the top 35 music festivals was chosen to provide an appropriate scope for an in-depth study of the sustainability practices and strategies adopted, allowing for an exploration of the intricacies and dimensions of the environmental consequences generated by these events.

To further enhance the understanding of these festivals, a multifaceted approach was employed. Interviews with some of the organizers were conducted to gain direct insights into the practices implemented by each festival. Additionally, events that offer access to sustainability reports or hold certifications were identified.

Music festivals that provide access to sustainability reports were selected as case studies, enabling an examination of the initiatives undertaken by these events to minimize their environmental impact. This approach also considers the challenges that may arise in implementing certain practices, as well as the suggestions provided for more sustainable development.

Furthermore, the opinions and perspectives of the audience play a fundamental role in the process of perceiving the repercussions of these events. Through data collection via a questionnaire, an effort is made to establish a direct link between the audience's needs, expectations, and perceptions regarding the sustainable practices adopted by music festivals. This approach allows for the identification of alignments and discrepancies between what is implemented and what is genuinely needed by the audience. Therefore, this chapter not only examines the festivals' initiatives from a sustainability perspective but also aims to capture the voice of those who participate in these events, contributing to a much more comprehensive view.

## 4.1 Largest music festivals

This research presents a selection of the largest music festivals today, classified based on the average daily attendance, and the overall ranking (see Annex D) consists of 135 festivals, with one exceptional case (totaling 136). In this exceptional case, the event refuses to provide data about its audience, making it impossible to rank and analyze it further. At this macro scale, the research primarily explored aspects related to geographic location, audience, duration, and type of access (open or private). This exploration aimed to establish associations between these aspects and the sustainability landscape. While significant and grand festivals exist on all continents, Figure 4.1 highlights Europe and North America, as they represent 84.55% of the large events market.

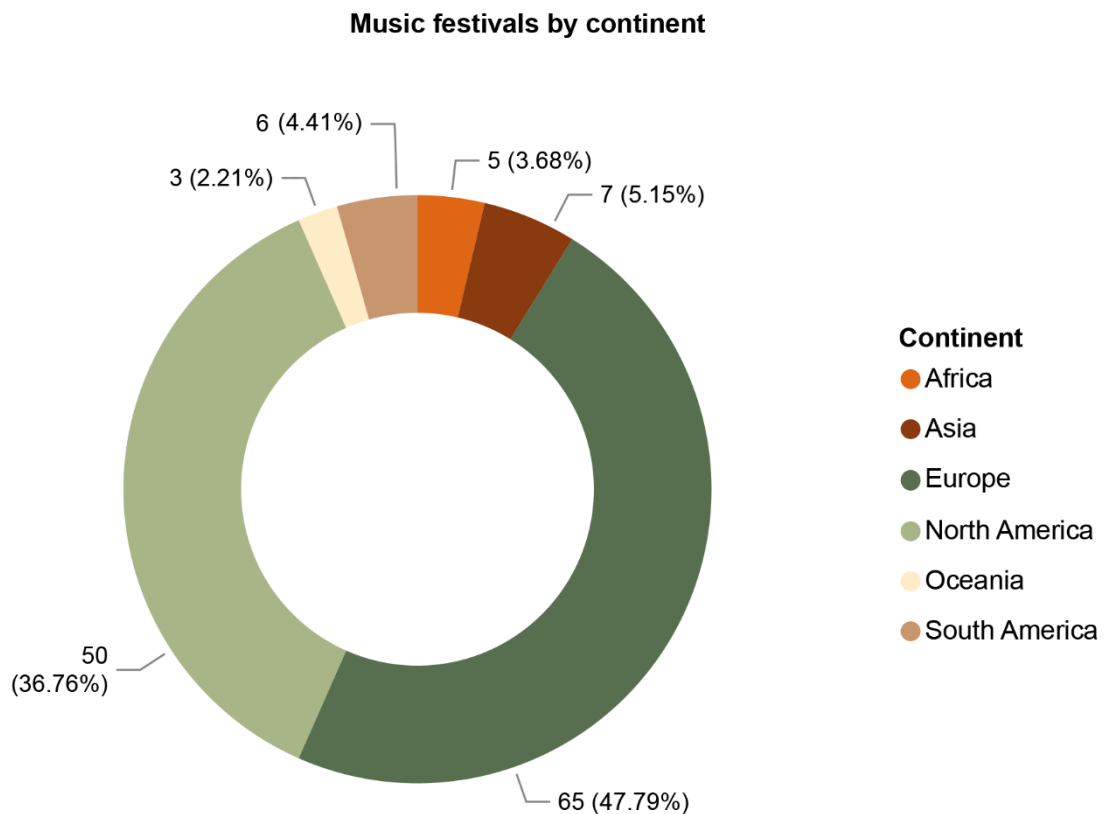


Figure 4.1 Music festivals by continent (author).

These variations in the interpretation of a "sustainable festival" underscore the diverse cultural and regional perspectives on environmental responsibility. In North America and Oceania, the emphasis is often placed on minimizing the festival's footprint, leaving the natural environment untouched. In contrast, Europe adopts a broader and more inclusive approach, aiming not only to limit negative impacts but also to actively contribute to the well-being of the community and enhance the local environment. This multifaceted perspective extends beyond environmental considerations and encompasses social and cultural dimensions, reflecting the evolving and interconnected nature of sustainability in festivals (Zifkos, 2015).

Regarding the countries where festivals occur, it is interesting to note the disparity in the number and popularity of events held in the USA compared to other nations (see Figure 4.2).

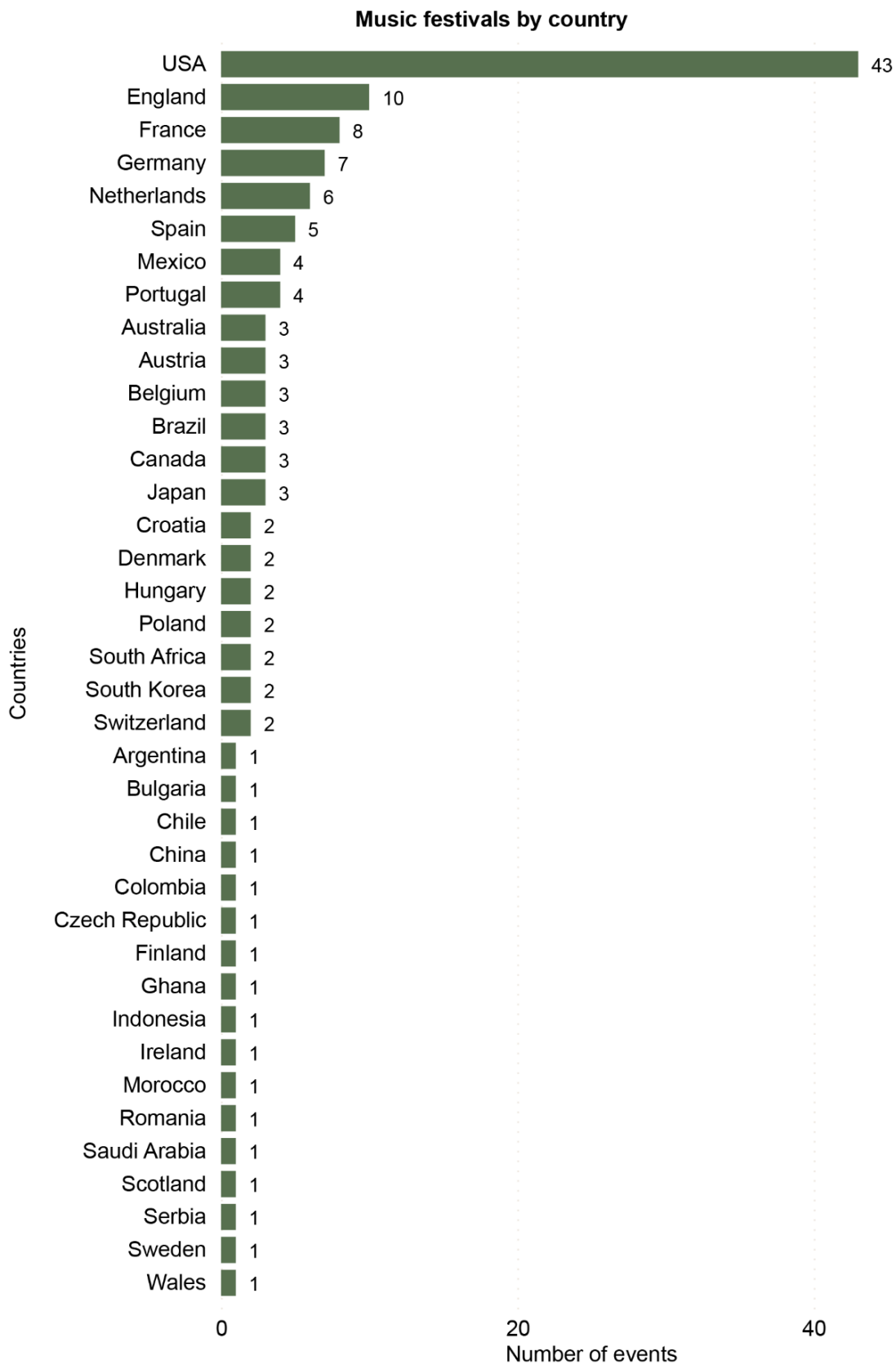


Figure 4.2 Music festivals by country (author).

As stated in the literature review, the festival industry has been experiencing significant growth. For example, the events market in Australia received around fifteen million people between 2009 and 2010, representing an increase of over 20% compared to 1999 (Mair and Laing, 2012). This growth impacts the economy through various factors, with ticket sales being the most significant. Many festivals increase ticket prices without negatively affecting the number of participants. In 2013, the established Coachella music festival generated over 47 million dollars from ticket sales. Regarding smaller or new events in the market, the Firefly Music Festival, in its debut year in 2012, managed to raise nine million dollars through ticket sales. All this success makes music festivals financially attractive ventures, even for stakeholders (Glassett, 2014).

Figure 4.3 confirms that most festivals are accessed through ticket purchases. However, the analysis of Annex D demonstrates the impressive scale of free events, as the top five positions in the ranking are occupied by music festivals with free or partially free programming, with attendance ranging from approximately 187 thousand to over one million people per day.

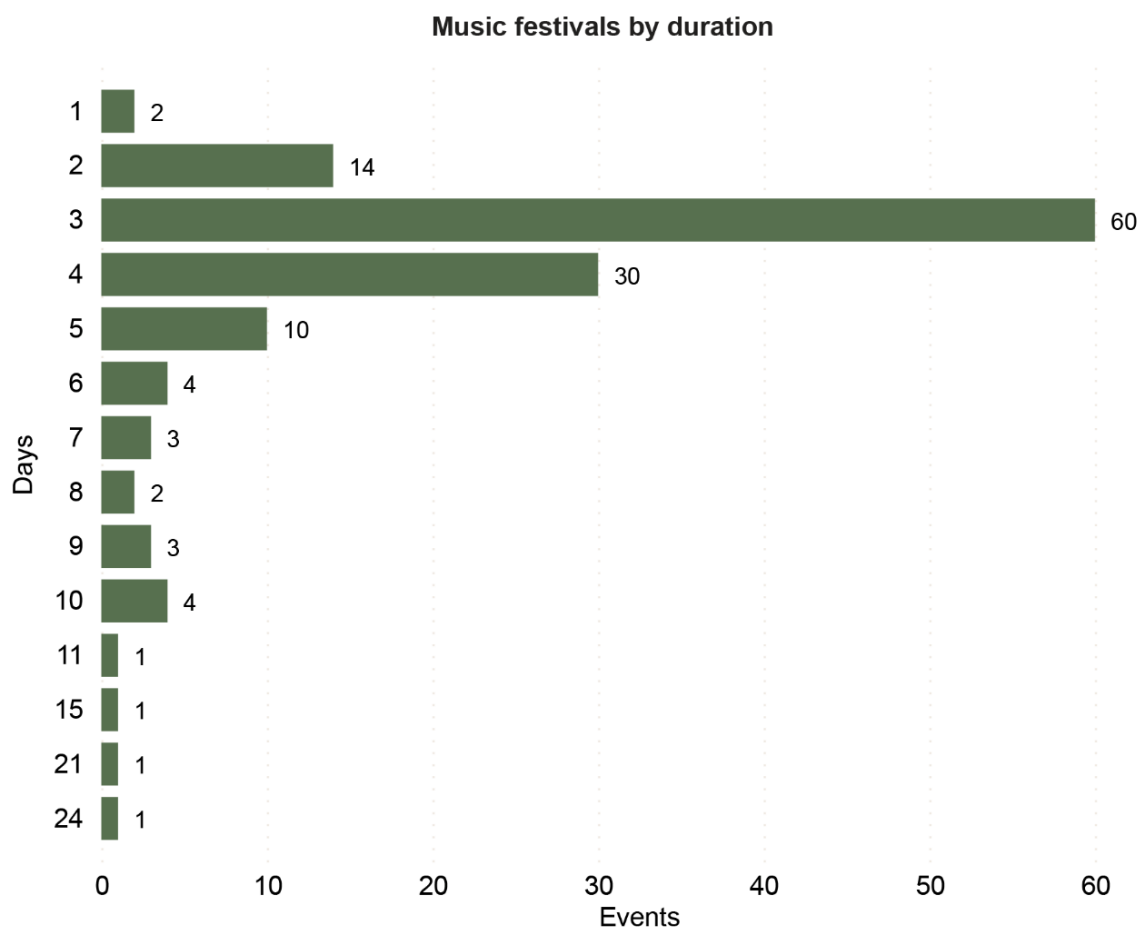


Figure 4.3 Music festivals by duration (author).

### Music festivals by type of access

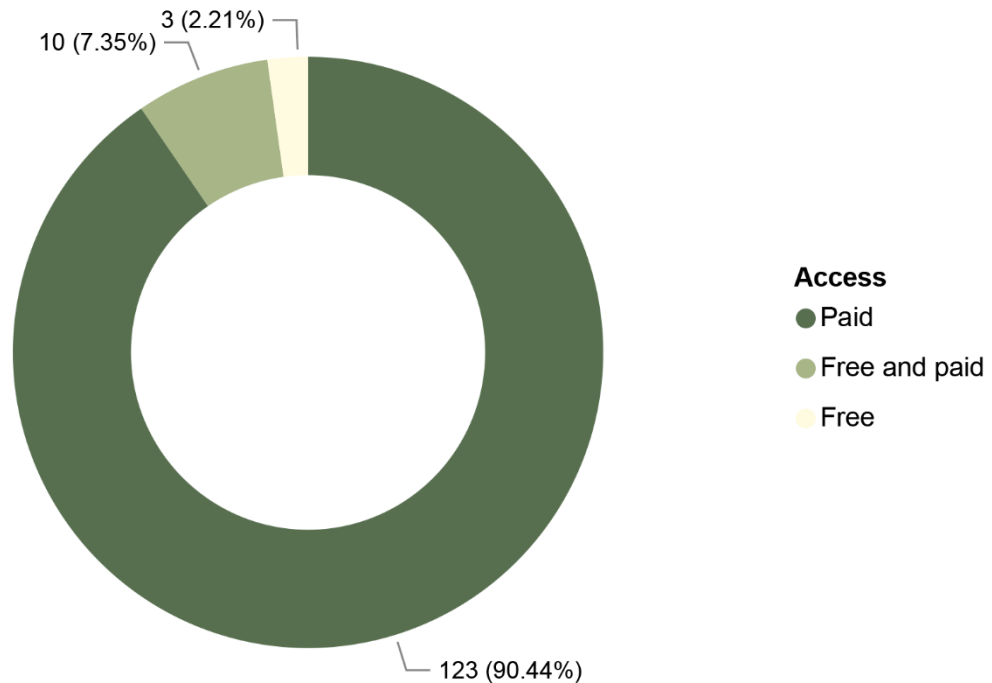


Figure 4.4 Music festivals by type of access (author).

Site characterization required an individual investigation of the surface areas where each of the events was located in the reference year mentioned in Annex D. The determination of the type of location was based on three main criteria: (i) use of the site outside of festival periods, (ii) biophysical characteristics, and (iii) the presence of infrastructure for events, such as stages or a support area for their setup, pathways for pedestrians and vehicles, loading and unloading areas, restrooms, parking lots, as well as access to supply systems, waste disposal, and treatment. Nineteen types of locations were identified and grouped according to Table 4.1.

Many of the mentioned locations (Table 4.1) share several common aspects, such as large outdoor spaces. However, their day-to-day uses promote fundamental differences that directly impact event organization. Each space has its own identity and purpose, whether it's a public park used for daily recreational activities, a football stadium hosting weekly games, a cultural venue housing regular exhibitions, or the city blocks and avenues, which in everyday life serve entirely different functions than those attributed by music festivals. These distinctions carry significant implications when it comes to planning and executing events, requiring a tailored approach that takes into account the available infrastructure, space characteristics, and their interactions with the local community.

Table 4.1 Characterization of venues where large-scale music festivals are held (author).

| Infrastructure | Location          | Description  |
|----------------|-------------------|--|
| Missing        | Airfield          | Runway for small aircraft takeoff and landing            |
|                | Beach             | Total or partial coverage on beach sands                 |
|                | Desert            | Literally, in the middle of the desert                   |
|                | Farm              | Site dedicated to agricultural or livestock activities   |
|                | Field             | Large open and undeveloped area                          |
|                | Golf course       | Extensive lawns used for training and competitions       |
|                | Island park       | Green area located within an island                      |
|                | Open-air venue    | Urban vacant space used for events                       |
|                | Park              | Infrastructure or green area                             |
|                | Racetrack         | Motor vehicle racing track                               |
|                | Ski resort        | Generally, high parts of certain mountains               |
| Existing       | Around the city   | Scattered in various locations throughout the city       |
|                | Convention center | Facilities dedicated to event hosting                    |
|                | Event blocks      | Cultural block designed to support events                |
|                | Event park        | Built area to accommodate events                         |
|                | Fortress          | Open spaces surrounding buildings                        |
|                | Hippodrome        | Horse racing tracks or surrounding areas                 |
|                | Island event park | Territory designated for events located within an island |
|                | Stadium           | Structure designed for competitions and sports           |

The graphical representation of the number of music festivals by location type (Figure 4.5) indicates that most of these events occur in environments characterized as event parks, which offer various structures prepared to accommodate a specific number of participants. However, the sum of locations with infrastructure is 67 units (49%), while festivals held in environments without these specific structures result in 69 units (51%). The absence of infrastructure requires even more extensive work on the part of festival management, as it needs to be provided temporarily to meet the demands of the public and to predict and control environmental impacts.

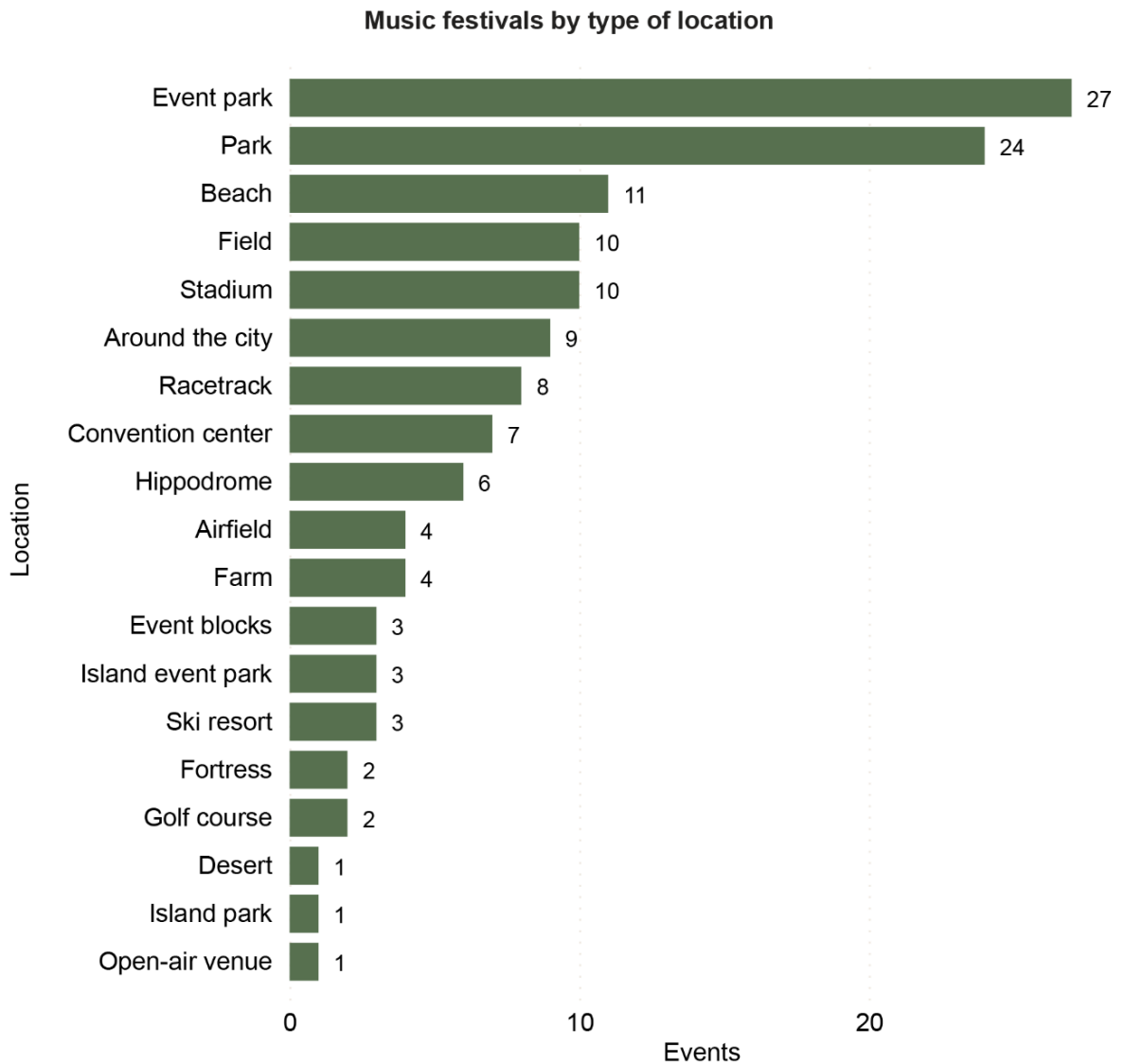


Figure 4.5 Music festivals by type of location (author).

The distinction among various festival environments, as highlighted in Figure 4.6, is crucial, particularly in the context of comprehending the unique challenges and impacts associated with transportation and mobility. When music festivals are situated within urban settings, they often enjoy the benefits of well-established road infrastructure and a diverse array of public transportation options with frequent schedules. This can facilitate easier access for attendees and reduce the reliance on personal vehicles. However, the flip side of this urban advantage lies in the potential exacerbation of traffic congestion due to the influx of festival-goers using private vehicles, which can significantly disrupt the daily routines of local residents and pedestrians. In such urban environments, the delicate balance between providing convenient access for festival attendees and preserving the quality of life for the local community becomes paramount. Effective transportation planning and management are critical to mitigate these negative effects, ensuring that festivals contribute positively to the urban fabric rather than causing undue

disruption. Additionally, urban festivals have the opportunity to integrate with existing public transportation systems, promoting sustainable travel options and reducing the overall environmental impact of the event. The interplay between festival logistics and urban dynamics underscores the need for thoughtful urban planning and cooperation between event organizers and local authorities to harmonize the festival experience with the surrounding community..

Conversely, festivals set in rural and desert landscapes present a distinct set of challenges regarding accessibility, particularly in the realm of public transportation. These remote locations often lack robust public transit infrastructure, leaving festival-goers with limited alternatives. In such cases, the inadequacy of bus routes to accommodate the substantial demand can push attendees toward relying on their personal vehicles as the primary mode of transportation to access the event site. This reliance on private vehicles not only strains the local road network but can also heighten the festival's ecological footprint due to increased emissions and environmental impact.

As observed in Figure 4.6, over 80% of music festivals occur in urban settings, meaning they are situated within cities. The classification of rural surroundings pertains to isolated events occurring in the countryside, mountains, or in the vicinity of small villages located far from major metropolitan areas. Meanwhile, the desert environment is even more extreme, hosting music festivals in arid, sparsely populated, and infrastructure-deprived terrain.

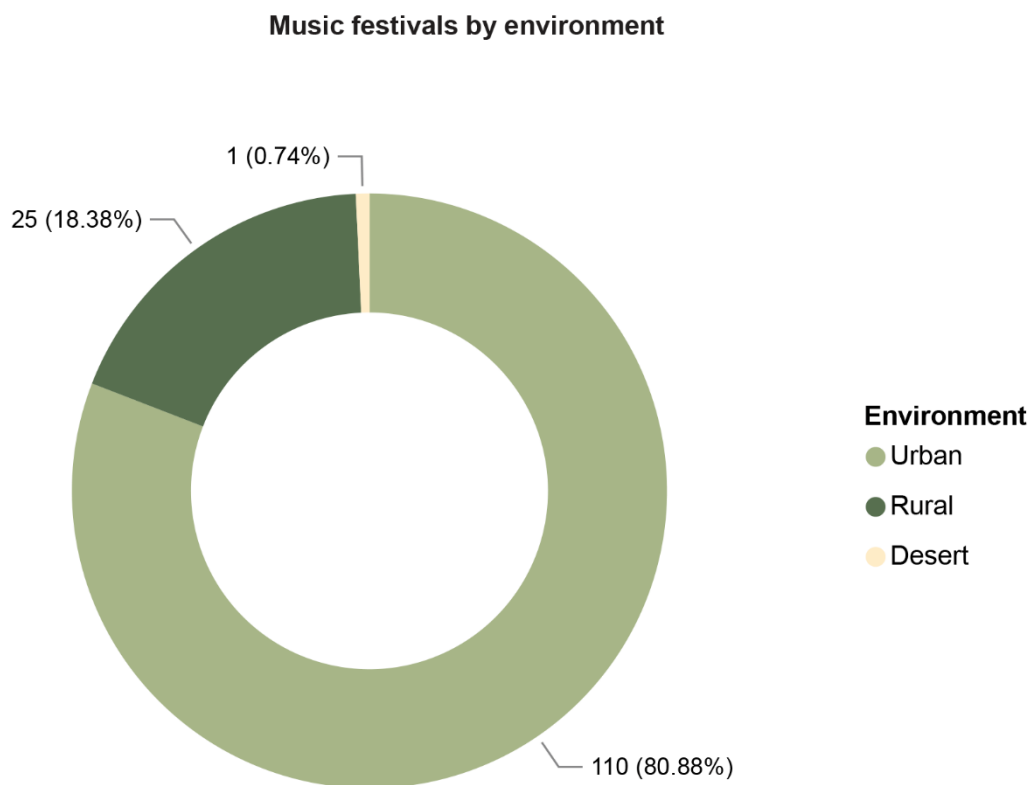


Figure 4.6 Music festivals by environment (author).

## 4.2 35 major events

Given the scope of Annex D, it was necessary to make a selection so that some events could be examined in greater detail. The first 35 positions were chosen for analysis in this chapter, viewed from the perspective of their organizers. For a positive checkmark (✓) in the designated themes, the festival presented solutions or initiatives related to them (Table 4.2).

Table 4.2 Themes considered by festival production (author).

| Nº | Event name                           | Awareness | Energy | Food | Mobility | Resources | Sewage | Social | Waste | Water |
|----|--------------------------------------|-----------|--------|------|----------|-----------|--------|--------|-------|-------|
| 1  | Donauinselfest                       | ✓         |        |      | ✓        | ✓         | ✓      |        | ✓     | ✓     |
| 2  | Street Parade                        |           | ✓      | ✓    | ✓        | ✓         |        | ✓      | ✓     |       |
| 3  | Mawazine Rabat                       |           |        |      | ✓        |           |        |        |       |       |
| 4  | Montreal International Jazz Festival | ✓         | ✓      |      | ✓        | ✓         |        | ✓      | ✓     | ✓     |
| 5  | Pol'and'Rock Festival                | ✓         | ✓      |      | ✓        | ✓         |        | ✓      | ✓     | ✓     |
| 6  | MDLBEAST Soundstorm                  |           |        |      |          |           |        | ✓      |       |       |
| 7  | Electric Daisy Carnival (EDC)        | ✓         | ✓      |      |          |           |        | ✓      | ✓     | ✓     |
| 8  | Primavera Sound                      | ✓         | ✓      | ✓    | ✓        | ✓         | ✓      | ✓      | ✓     | ✓     |
| 9  | Edinburgh Festival Fringe            |           |        | ✓    | ✓        | ✓         |        | ✓      | ✓     |       |
| 10 | ESSENCE                              |           |        |      |          |           |        | ✓      |       |       |
| 11 | Lollapalooza Argentina               |           |        |      |          |           |        |        |       |       |
| 12 | EDC Mexico                           | ✓         | ✓      |      |          |           |        | ✓      | ✓     | ✓     |
| 13 | Rock in Rio                          | ✓         | ✓      | ✓    | ✓        | ✓         | ✓      | ✓      | ✓     | ✓     |
| 14 | Tomorrowland                         |           |        |      |          |           |        | ✓      | ✓     |       |
| 15 | Lollapalooza USA                     | ✓         |        |      |          |           |        |        | ✓     | ✓     |
| 16 | Lollapalooza Brazil                  | ✓         |        |      |          |           |        |        |       |       |
| 17 | EDC Orlando                          | ✓         | ✓      |      |          |           |        | ✓      | ✓     | ✓     |
| 18 | Summer Sonic                         |           |        |      | ✓        |           |        |        |       |       |
| 19 | Coachella Valley Music and Arts      | ✓         | ✓      | ✓    | ✓        | ✓         |        |        | ✓     | ✓     |
| 20 | UNTOLD Festival                      |           |        |      |          |           |        |        |       |       |
| 21 | Festival Interceltique de Lorient    | ✓         |        | ✓    | ✓        | ✓         | ✓      |        | ✓     | ✓     |
| 22 | Amsterdam Dance Event (ADE)          | ✓         |        |      |          |           |        | ✓      |       |       |
| 23 | Country Music Association Festival   |           |        |      |          |           |        | ✓      |       |       |
| 24 | Rock Werchter                        | ✓         | ✓      | ✓    | ✓        | ✓         | ✓      | ✓      | ✓     | ✓     |
| 25 | Lollapalooza Berlin                  | ✓         | ✓      | ✓    | ✓        | ✓         | ✓      | ✓      | ✓     | ✓     |
| 26 | HARD Summer                          |           |        |      |          |           |        |        |       | ✓     |
| 27 | Austin City Limits (ACL)             | ✓         |        |      |          |           |        | ✓      | ✓     | ✓     |
| 28 | Lollapalooza Chile                   | ✓         | ✓      | ✓    | ✓        |           |        | ✓      | ✓     |       |
| 29 | Leeds Festival                       | ✓         | ✓      | ✓    | ✓        | ✓         | ✓      | ✓      | ✓     | ✓     |
| 30 | Stagecoach Music Festival            |           |        |      | ✓        |           |        |        | ✓     | ✓     |
| 31 | Outside Lands Music and Arts         | ✓         |        | ✓    | ✓        |           |        | ✓      | ✓     | ✓     |
| 32 | Rock in Rio - Lisbon                 | ✓         | ✓      | ✓    | ✓        | ✓         | ✓      | ✓      | ✓     | ✓     |
| 33 | NOS Alive                            | ✓         |        | ✓    | ✓        | ✓         |        | ✓      | ✓     |       |
| 34 | SZIGET                               | ✓         | ✓      | ✓    | ✓        | ✓         | ✓      | ✓      | ✓     | ✓     |
| 35 | Boomtown Fair                        | ✓         | ✓      | ✓    | ✓        | ✓         |        | ✓      | ✓     | ✓     |

**Adherence to the themes considered by festival production**

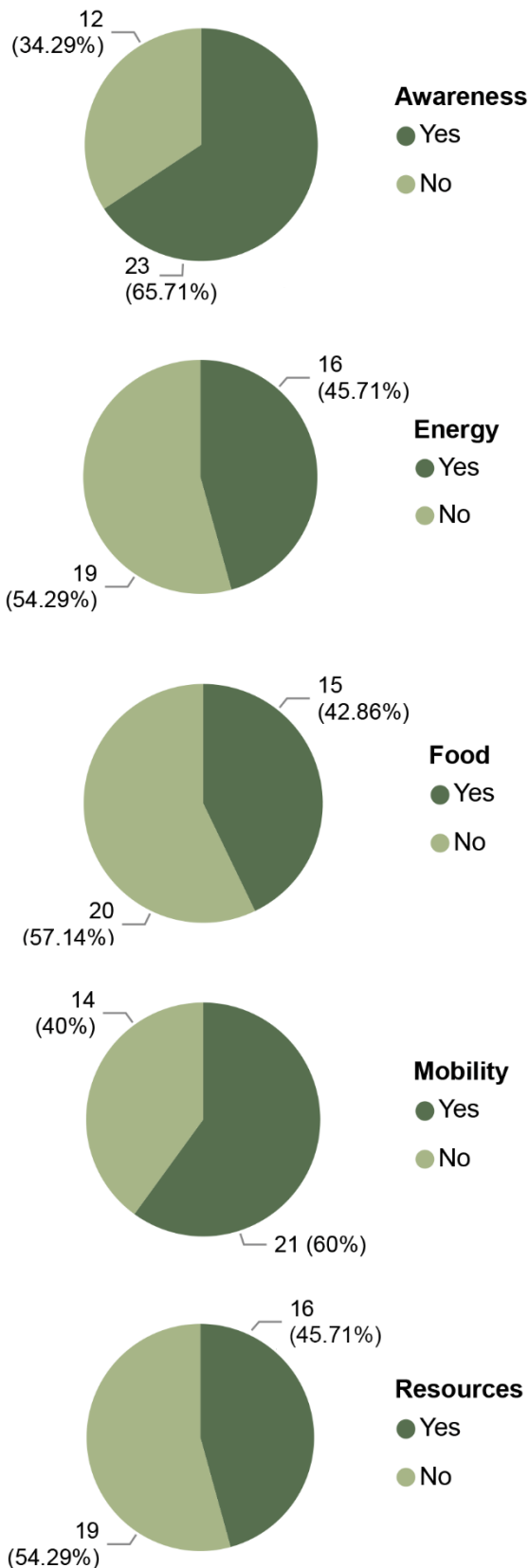


Figure 4.7 Adherence to the themes considered by festival production - part I (author).

The charts in Figures 4.7 and 4.8 were created based on the information provided in Table 4.2 and represent the level of engagement and control of music festivals regarding the following sustainability-related topics: awareness, energy, food, mobility, resources, sewage, social, waste, and water.

**Awareness** is a multifaceted endeavor that entails ongoing education for both festival attendees and staff throughout all phases of the event. Fostering a deep understanding of environmental responsibility is pivotal. By continually emphasizing these principles, festivals can empower participants and organizers to take meaningful actions that extend beyond the event, ultimately fostering a broader culture of environmental consciousness and stewardship.

**Energy** is primarily related to reducing the consumption of fossil fuels, whether associated with transportation or event needs. This includes the introduction of clean and renewable energy sources, the adoption of energy-saving initiatives, and the calculation and evaluation of the carbon footprint.

**Food** covers the use of locally sourced ingredients for food preparation, the introduction of vegan and vegetarian options on menus, significant reduction or elimination of food waste, and composting of food waste.

**Mobility** involves efforts to reduce carbon emissions related to transportation. This includes mobility plans, promoting the use of public transportation and ride-sharing systems, operating electric vehicles, and providing suitable infrastructure for sustainable mobility.

**Resources** encompass not only the purchase and sale of products that meet the event's ecological parameters but also the environmental commitment and responsibility of suppliers from manufacturing to delivery.

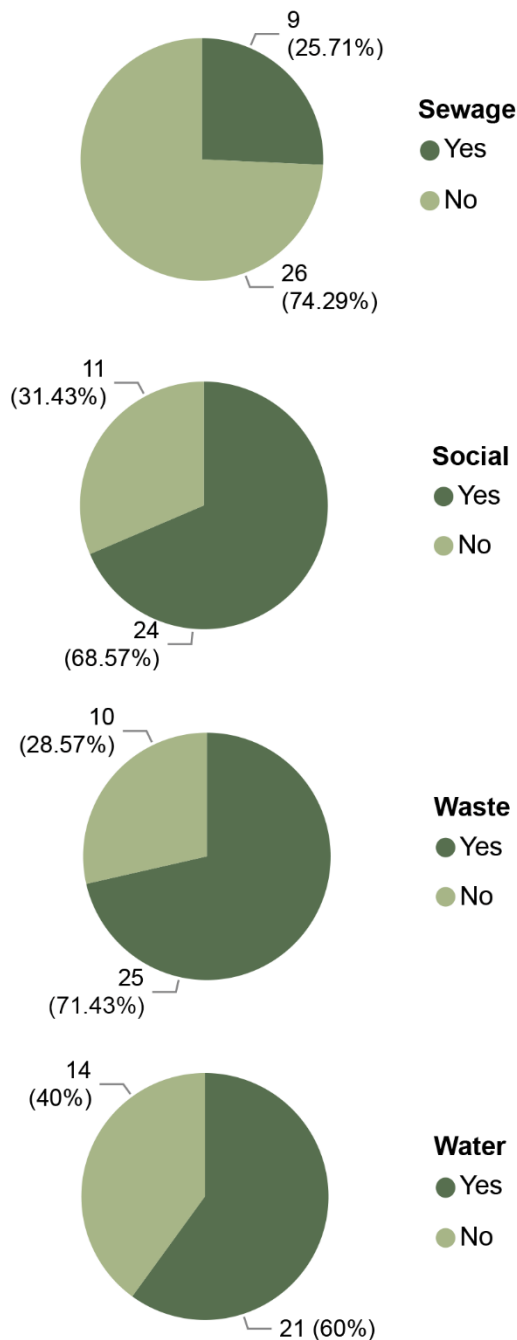


Figure 4.8 Adherence to the themes considered by festival production - part II (author).

**Sewage** management at festivals involves the redirection of wastewater into urban collection systems, leading it to treatment plants or the use of specialized dry or chemical toilet systems, ensuring that waste disposal aligns with the festival's unique needs while minimizing environmental impact.

The implications of the **Social** theme are connected to the positive impacts benefiting society and communities around the event venue. This includes promoting culture, providing opportunities for local artists, supporting charitable institutions, reforestation campaigns, improving and maintaining squares, parks, and other green areas, offering education related to music and the creative industry, among other initiatives.

**Waste** relates to waste mitigation aimed at reducing landfill disposal through various waste reduction campaigns. This includes selective waste collection, reward programs for packaging returns, the use of biodegradable materials, donation of unused items and food, strict control over giveaways and packaging, and other measures.

**Water** management at a music festival encompasses a comprehensive approach, including the provision of drinking water refill stations and the recycling of treated graywater for gardening, flushing, and cleaning activities, demonstrating a commitment to sustainable water use.

The information provided in Table 4.2 and Figures 4.7 and 4.8 paints a picture of the key themes considered by festivals during their planning, development, and execution processes concerning various sustainability aspects. The responses reveal where the main considerations regarding the environment, energy, food, mobility, resources, sewage treatment, social aspects, waste, and water are incorporated, as well as where there is a lack of commitment to these areas.

The results show that there are already festivals making efforts in areas such as waste, mobility, awareness, and social actions. However, they also indicate that there is still room for improvement in sectors like food, resource use, and blackwater treatment.

Within this subchapter, a description of the 35 highlighted events in Table 4.2 will be provided, with each event being presented concisely based on information collected from their official sources. This approach offers a general overview of these events, creates an approximate context, and highlights their characteristics and the leading sustainability practices they adopt. This helps establish a stronger connection between music festivals and environmental responsibility and demonstrates how some of these events are already implementing procedures to promote positive environmental changes.

### **#1 Donauinselfest**

The Donauinselfest, established in 1984, is an annual event held on the Danube Island in Vienna, Austria, with open access to the public. The festival area spans 4.5 kilometers, with multiple outdoor stages and covered areas around the island. It features a diverse program encompassing different music genres, dance, entertainment, sports, food and beverage stalls, and numerous activities for children. The festival actively encourages the use of public transportation and sustainable mobility by visitors, offering bicycle infrastructure and promoting easy access to the event location with a wide range of public transportation options. Such accessibility becomes a prominent feature that significantly contributes to the event's sustainability (Donauinselfest, 2023; Vienna Online, 2023).

Regarding ecological responsibility, the event implements recycling programs and proper waste separation during the festival (Stadt Wien, 2023), raising participants' awareness of the importance of material reduction, reuse, and recycling. In 2019, for example, 900 trash containers were placed on-site, supplemented by an additional 200 bins (Vienna Online, 2019). Using washable, reusable cups helps reduce waste generation and CO<sub>2</sub> emissions by avoiding replacement trips. The festival aims to reduce water consumption by encouraging conscientious water use practices and providing drinking water refill stations to reduce the excessive use of plastic bottles. The provided restrooms feature vacuum flush systems, which are highly water-efficient (Donauinselfest, 2023).

### **#2 Street Parade**

The first edition of Street Parade took place in 1992 and has since become an icon of the European electronic music scene. Held annually in Zurich, Switzerland, it attracts thousands worldwide, creating a vibrant and infectious party atmosphere. Various floats equipped with powerful sound systems parade through the streets, featuring renowned DJs playing electronic music of different styles. The event strongly promotes themes of freedom, equality, and diversity, conveying messages of peace, tolerance, and unity while celebrating the culture and individuality of each participant. Street Parade is known not only for the main parade but also for the numerous parallel events, parties, and performances throughout Zurich over the entire weekend (Street Parade, 2023).

The event is free and primarily funded by the sale of beverages, with a portion of the profits dedicated to environmental protection and support for local organizations. Among its sustainability efforts, notable actions include the collection of all organic waste, which is processed in a biogas plant and then injected into Zurich's gas network. The stages and kiosks are powered by green electricity and constructed from storm-damaged wood, free of plastic. CO<sub>2</sub> emissions from the music trucks are offset through a partnership with a company, waste separation for recycling, sale of beverages in recyclable PET or aluminum containers, provision of biodegradable utensils for dining, and a campaign promoting the use of public transportation (Street Parade, 2023).

### **#3 Mawazine Rabat**

Mawazine Rabat, created in 2001 under the High Patronage of His Majesty King Mohammed VI and organized by the Maroc Cultures Association, is the largest music festival in the African continent. It is held annually in Rabat, Morocco. The festival offers free access to 90% of its shows and concerts, featuring a diverse lineup of national and international artists performing on various stages throughout Rabat. The musical genres span from pop, rock, traditional Moroccan, African, and electronic music. Additionally, the festival provides a variety of cultural activities, such as art exhibitions, dance performances, workshops, fairs, and street performances in the typically less affluent residential areas of Rabat (Mawazine, 2023).

Its goal is to promote cultural diversity and the values of the Kingdom, while advocating a message of tolerance, openness, respect, and dialogue. It aims to offer high-quality entertainment and strengthen the music industry in Morocco (Mawazine, 2023). In recent years, the festival has influenced Rabat's infrastructure and contributed to rejuvenating parts of the city (Razavi, 2014). The festival encourages carpooling and the use of public transportation due to the venue locations and limited parking. A train departs from Rabat every night at midnight (Mawazine, 2023). The event's official website does not provide extensive information on sustainability.

### **#4 Montreal International Jazz Festival**

The Montreal International Jazz Festival takes place annually in Montreal, Canada. Founded in 1980, it is recognized by the Guinness World Records as the world's largest jazz festival. The city transforms into a vibrant cultural hub during the event, bringing together renowned jazz musicians and various music styles. It features a diverse program that includes outdoor concerts, performances in concert halls, free shows, and family-friendly activities. The festival also offers workshops, masterclasses, conferences, and exhibitions related to jazz and music in general (Montreal Jazz Fest, 2023).

The Festival International de Jazz de Montréal began taking environmental measures as early as 1989. It has since implemented sustainable development initiatives to minimize its environmental impact and maximize its positive influence on society and the local economy. The festival provides the "Actions de Développement Durable" document, which lists various actions taken, such as the use of hydropower or solar energy, the installation of self-service water fountains, 100% reusable alternatives for all dishes and utensils used by restaurants, the elimination of disposable cups at food and beverage

stands, artist dressing rooms, and backstage areas, the installation of waste separation stations, the formation of a green brigade to inform and assist festival participants in waste separation, the creation of an eco-center dedicated to recovering construction and hazardous materials, the collection and recycling of cigarette butts, a drastic reduction in the use of printed materials in favor of screens, monoliths, and a mobile app, the provision of over 300 free bicycle parking spaces with a pump, flat tire repair kit, and skateboard storage compartments, the promotion of public transportation on the festival's website and mobile app, contributions to the community through collaborations with important social organizations (La rue des Femmes and Renaissance), and accessibility to accommodate people with reduced mobility and enhance their experience. The event's organizers are actively working to achieve the BNQ Level 2 standard (Montreal Jazz Fest, 2023).

### **#5 Pol'and'Rock Festival**

The Pol'and'Rock Festival, formerly Woodstock Festival Poland, is held annually at the Czaplinek-Broczyño Airfield in West Pomeranian Voivodeship, Poland. Its origin dates back to 1995 when it was conceived by the renowned Polish musician Jerzy Owsiak. Currently, its organization is the responsibility of the WOŚP Foundation (Wielka Orkiestra Świątecznej Pomocy), a non-profit organization dedicated to assisting underprivileged children and young people. Through its social and humanitarian character, the festival raises funds to support projects related to the health, education, and well-being of children and young people in Poland (WOSP, 2023). The Pol'and'Rock Festival is known for its unique freedom, peace, and solidarity atmosphere. In addition to the grand musical performances, the festival encompasses a wide range of cultural activities, including theater, cinema, urban art, workshops, and lectures. Bringing together individuals from different backgrounds and nationalities to celebrate music and promote cultural diversity, it offers free admission, providing access to everyone regardless of their financial condition. It is primarily funded through voluntary donations from participants and the support of sponsors (Pol'and'Rock, 2023).

The event encourages carpooling and sustainable mobility through the "Pomorze Zachodnie" (Western Pomerania) app. It encourages visitors to use public transportation to reach the event by providing a travel bank and additional train lines and connections on its website. Additionally, since 2018, during the festival, they have implemented the "Eco Zaraz Będzie Czysto" initiative [Eng. "It's going to be clean soon"], which commits to gradually reducing the use of plastics and disposable packaging and encourages the public to collect and deposit waste at various recycling collection points. There is also an emphasis on water conservation, the provision of drinking water refill stations, the offering of 100% recycled drink cups, zones for phone charging with solar and wind power, and debates and workshops on ecology and healthy lifestyles (Pol'and'Rock, 2023).

### **#6 MDLBEAST Soundstorm**

The music industry in Saudi Arabia thrived in secrecy until, in 2016, the General Entertainment Authority authorized private events to become public domain. Under this unrestricted setup, the MDLBEAST Soundstorm emerged in 2019, a groundbreaking electronic music festival for Saudi youth

that brings together globally renowned artists and promising local talents. Its main objective is to foster regional talent through incentive and promotion programs (MDLBEAST, 2023).

They demonstrate commitment and engagement in campaigns against harassment and prejudice, aiming to raise awareness and sensitize their audience to these issues. However, they do not provide any information about sustainability on their online platform (MDLBEAST, 2023). The official event page does not offer further details on environmental impacts.

### **#7 Electric Daisy Carnival (EDC)**

The Electric Daisy Carnival (EDC) originated in the 1990s as an electronic music party in Southern California, United States. The festival's first edition was held in 1997, organized by Pasquale Rotella and his company Insomniac Events, which produces and promotes the festival. Since then, it has expanded to various locations worldwide, including Las Vegas, New York, Chicago, Dallas, Orlando, Denver, London, Mexico, Brazil, China, Japan, Korea, India, and Puerto Rico. EDC is famous for its extravagant visual production, with impressive stages, immersive art installations, fireworks, and performances by various renowned artists (Insomniac, 2023). The festival values community culture and connection among participants, promoting a positive, creative, inspiring, and inclusive atmosphere that celebrates the diversity of people from different backgrounds and lifestyles (EDC Las Vegas, 2023).

In 2014, Insomniac announced a partnership with Global Inheritance (an environmental awareness organization that conducts eco-initiatives at festivals in the United States). It implemented the TRASHed Recycling Store during the event. This initiative encouraged participants to exchange empty cans and plastic bottles found on the site for various prizes. Over 52,000 bottles were collected during the three-day festival and properly sent for recycling (Insomniac, 2023). Insomniac is dedicated to national charities and community organizations, seeking to positively impact the communities where their events occur. They donate a percentage of ticket sales to various causes, including children and families, public safety, education, sustainability, and environmental awareness. EDC provides free hydration stations throughout the venue and encourages the use of reusable water bottles, hydration backpacks, or any empty container for beverages that can be purchased within the festival (EDC Las Vegas, 2023).

During an interview in 2020, EDC representatives reaffirmed the event's focus on health, well-being, and sustainability, with beneficial initiatives for the surrounding community where the festivals occur, such as the use of biofuels and solar energy for generators at selected events and the reduction of disposable plastic bottles (Storey, 2020). However, more information about the sustainability actions adopted by the event is unavailable on official platforms.

### **#8 Primavera Sound**

The Primavera Sound Festival was founded in 2001, and its main edition takes place annually in Barcelona, Spain. In 2012, Primavera Sound held its first edition in Porto, Portugal. In 2022, with increased popularity and reputation, it hosted its inaugural editions in Los Angeles, São Paulo, Buenos

Aires, and Santiago, Chile. Primavera Sound is known for its diverse and eclectic lineup, featuring performances by established and emerging artists spanning various musical genres (Primavera Sound, 2023).

The event involves social responsibility projects, such as donations to charities and solidarity actions (Fundació Primavera Sound, 2023). Furthermore, since 2019, it has been a music festival associated with the United Nations Sustainable Development Goals campaign. It consistently seeks strategies and options to make the event environmentally friendly in all aspects. These efforts include selective waste collection for recycling, the calculation and offsetting of CO<sub>2</sub> emissions, the use of a sustainable stage powered by 100% electric energy in Barcelona and Madrid, the provision of rest areas powered by solar panels, the use of reusable cups and compostable tableware in dining areas, a wide range of vegetarian, vegan, and locally sourced food options, promotion of public transportation through partnerships with local transport associations and companies, bike parking facilities to encourage sustainable transportation to the event, and hiring and training staff to educate and raise awareness among food and beverage concessionaires (Primavera Sound, 2023).

Recognizing the basic sustainability principles, Primavera Sound has established an environmental policy organized through documented technical monitoring of festival editions. This approach allows for precise planning, necessary action implementation, evaluation, and results monitoring, all aimed at continuous improvement. The environmental policy seeks to ensure compliance with legal requirements and environmental regulations, prevent environmental costs resulting from festival operations and activities by promoting measures to minimize generated impacts and enhance the audience and team's overall event experience and satisfaction. Additionally, collective participation in reducing environmental impact is acknowledged. The audience is encouraged to adopt good practices such as avoiding water wastage, using water fountains to reduce excessive plastic bottle use, using public transportation or sustainable mobility, consuming products with minimal packaging, disposing of waste in designated areas, using restrooms to maintain cleanliness, and taking care of trees and plants (Primavera Sound, 2023). As a result of these initiatives, Primavera Sound received Greener Future Awards certification in various years (2016, 2017, and 2018 "recommended," and in 2012, 2019, and 2022 "highly recommended") (A Greener Future, 2023).

### **#9 Edinburgh Festival Fringe**

The Edinburgh Festival Fringe was founded in 1947 and takes place annually for three weeks in Edinburgh, Scotland. It has an open and inclusive approach, celebrating art and culture and attracting a wide range of artists from the world of entertainment, whether experienced or not. It offers theater, comedy, music, dance, cabaret, circus, opera, exhibitions, and more performances. The charity organization known as The Edinburgh Festival Fringe Society is responsible for fully organizing the structure that supports the festival. This organization was created by artists to preserve and promote the principles of inclusion, experimentation, and imagination that run through the event, with the support of local citizens, the public, sponsors, and donors (Edfringe, 2023).

In 2017, the Fringe Society developed the Fringe Blueprint, a statement of intent that guided all actions taken until 2022. The document consists of eight commitments: inclusion, reputation, access, new space, encouragement, development, sustainability, and outreach. In 2022, the festival introduced new long-term development objectives with vision and values. The main themes addressed are becoming the best place to nurture and promote emerging artists and new talents, eliminating exploitative and/or unfair working conditions, achieving a net-zero carbon emissions event by 2030, promoting equality and inclusion, allowing anyone and everyone to participate in various aspects of the festival, working for the city's benefit and contributing to the common good, and globally developing the digital experience of the event (Edfringe, 2023).

The Edinburgh Festival Fringe Society relies on three distinct approaches to uphold and fulfill its values, which include promoting positive behaviors and decisions, involving the festival community in actions, identifying challenges, enlisting specialized organizations to address them, and promoting individual and collective responsibility, as well as quantifying and evaluating the festival's impacts and suggesting improvements that can enhance the audience's experience (Edfringe, 2023). According to Alan Gordon of the Edinburgh Festival Fringe Society, ensuring the festival's sustainability depends much more on small decisions made throughout the event than on a single major action. With this in mind, the Fringe suggests some methods that can be applied by anyone, such as sharing vans, opting for public transportation, sustainable mobility, or carpooling, prioritizing the use of QR codes in promotional materials, creating reusable and sustainable sets, and seeking to minimize food and beverage waste (Spotlight, 2023).

#### **#10 Essence Music Festival**

The Essence Festival, founded in 1995 by Essence magazine, is an annual event celebrating African-American music and culture held in New Orleans, United States. The festival celebrates black music, fashion, art, and cuisine, featuring musical performances by renowned artists, panel discussions, workshops, empowerment seminars, art and fashion exhibitions, as well as networking events and business opportunities. Additionally, the festival contributes to the local economy, its commitment to the community, and social activism (Essence, 2023). The website does not provide information about sustainability.

#### **#11 Lollapalooza Argentina**

The edition of Lollapalooza in Argentina has been taking place since 2014 in Buenos Aires, attracting a diverse audience and offering musical performances, interactive experiences, artistic expressions, children's activities, dining areas, and spaces dedicated to brands and sponsors. Through the "Espíritu Verde" (Green Spirit) program, Lollapalooza Argentina encourages a healthy and environmentally conscious lifestyle, with activities such as guided meditation, yoga practice, manual therapies, lectures on relevant topics such as nutrition, physical and mental health, and ecosystem preservation, among others (Lollapalooza AR, 2023). Apart from those mentioned here, no other information regarding actions and projects related to environmental responsibility was found on the event's official website.

### **#12 Electric Daisy Carnival (EDC) Mexico**

The first edition of the Electric Daisy Carnival in Mexico City, Mexico, occurred in 2014 (EDC Mexico, 2023). Just like #6 EDC Las Vegas, the event is managed by Insomniac, so they share sustainability and environmental responsibility goals and objectives based on the same principles, with considerations and relevance to local demands and specificities. However, the official website has no dedicated section for environmental preservation practices.

### **#13 Rock in Rio**

Rock in Rio had its first edition in 1985 in Rio de Janeiro, Brazil. It brings together renowned artists on the global scene, offers a diverse program and provides various entertainment and leisure areas, gastronomy spaces, theme parks, exhibitions, and interactive activities (Rock in Rio, 2023).

The editions of Rock in Rio are known for their strong commitment to sustainability and social responsibility. Through their project "Rock in Rio for a better world," they implement sustainable practices and promote actions of positive social impact, such as proper waste management, the use of renewable energy, the encouragement of public transportation use, environmental awareness campaigns, and social projects (Rock in Rio, 2023). The practices adopted by RiR will be presented in more detail through the sustainability report examined in subsection 4.4.1.

In 2013, the festival was certified by APCER according to ISO 20121, and recently, the event organizers published ambitious sustainability goals for 2030, aligned with the United Nations Sustainable Development Goals (Rock in Rio, 2023; APCER, 2022).

### **#14 Tomorrowland Belgium**

The largest edition of Tomorrowland takes place in Boom, Belgium, founded in 2005, and the event attracts electronic music fans worldwide (Tomorrowland, 2023). Through the Tomorrowland Foundation, the event provides support to non-profit organizations that work on building music and art schools and actively contribute to the creative expression of various children and young people in vulnerable situations, mainly through music, dance, and the arts. Additionally, the Tomorrowland Foundation collaborates with Mobile School, an organization dedicated to street children worldwide (Tomorrowland Foundation, 2023).

Switch for Tomorrow is a festival platform whose goal is to inspire transformation and encourage the audience to promote positive changes in terms of well-being, sustainability, and social impact. The event provides infrastructure for waste separation and disposal to ensure recycling (Switch for Tomorrow, 2023).

### **#15 Lollapalooza USA**

Lollapalooza, founded in 1991, is an annual music festival held in various cities worldwide, with its main edition in Chicago, Illinois, United States. The event offers diverse artists from different musical genres (Lollapalooza, 2023).

The partnership between the event and REVERB, a non-profit organization that aspires to a sustainable future for people and the planet, has resulted in the implementation of some programs, such as Rock & Recycle, which encourages recycling by exchanging empty containers for collectible t-shirts, Diver It!, which assists the audience in separating their waste, and Refill Stations, which help reduce the number of single-use plastic bottles (Reverb, 2022). It's important to note that the official event website does not provide any information about sustainability or executed actions.

### **#16 Lollapalooza Brazil**

Lollapalooza Brazil is an annual music festival held in São Paulo, Brazil. Its first edition took place in 2012, making it the second country outside the USA to host a version of Lollapalooza, following Lollapalooza USA. In addition to musical performances, the festival grounds offer rest areas, services, and food options (Lollapalooza BR, 2023).

A sustainability initiative was identified in partnership with the company BRASKEM, aiming to raise awareness among the festival's attendees about plastic waste disposal. The campaign encourages proper disposal, educates about the circular economy, and offers rewards in exchange for empty containers (CNN Brazil, 2023; Alves, 2022). Like its predecessor, the official website does not provide information about sustainability or actions implemented to enhance it.

### **#17 Electric Daisy Carnival (EDC) Orlando**

The Electric Daisy Carnival in Orlando, Florida, USA, took place for the first time in 2011 (EDC Orlando, 2023). Like EDC Las Vegas (#7) and EDC México (#12), the event is managed by Insomniac, so they share sustainability and environmental responsibility objectives and goals based on the same principles, with considerations for local demands and specificities. However, the official website does not have a section dedicated to environmental preservation practices.

### **#18 Summer Sonic**

The Summer Sonic Festival was launched in the 2000s and occurs simultaneously in Tokyo and Osaka, Japan. The event features a variety of musical genres and both national and international artists. In addition to music, there are other attractions, activities, and entertainment options for children and adults, as well as artistic expressions, food areas, and sponsor booths. The festival recommends that participants use public transportation, mainly due to limited parking availability at the venue (Summer Sonic, 2023). The event's official website does not provide information or statistics regarding sustainability or social responsibility (Summer Sonic, 2023).

### **#19 Coachella Valley Music and Arts Festival**

Coachella was founded in 1999 and takes place annually in Indio, California, USA. It encompasses a wide range of music genres, attracting a diverse audience. In addition to live performances, it offers interactive art installations, visual displays, and artistic performances. The intersection of music,

art, fashion, and pop culture makes Coachella an influential platform for globally-reaching trends (Coachella, 2023).

Through its partnership with Global Inheritance, Coachella develops environmental and educational programs that integrate global concerns like climate change into the festival experience. The event addresses carbon footprint awareness and encourages sustainable choices, such as reducing disposable plastics and using reusable bottles, while rewarding those who collect and turn in recyclable waste. Coachella is committed to waste minimization, recycling, composting, and donating unused items. It provides educational programs for staff, collaborates with partners and vendors who support its initiatives, and implements creative actions like the Energy Playground, TRASHed, and the POSTed Studios project to teach about energy and sustainability in a dynamic and interactive way. Among its measures to reduce environmental impacts are Carpoolchella (rewarding participants who carpool), providing festival buses, offering camping spaces (to avoid daily commuting for up to 35,000 people), proper waste disposal signage, vegan and vegetarian alternatives, water refill stations, and the use of compostable service utensils. Its primary goal is to become more environmentally friendly, contributing to a more sustainable future and benefiting the community (Coachella, 2023).

#### **#20 UNTOLD Festival**

UNTOLD is an annual music festival held in Cluj-Napoca, Romania, Transylvania. It was founded in 2015 and features a diverse lineup focusing on electronic music (Untold, 2023). Among all the music festivals that ranked in the top thirty positions in this document's analysis, UNTOLD Festival provides the least amount of concrete information. The "about" section of the event's official LinkedIn page states that UNTOLD is a partner of the Parliament of the European Union and, in addition to promoting sustainability, aims to make the world a better place (Untold Festival LinkedIn, 2023). However, no data, references, or projects were found that can confirm this statement.

#### **#21 Festival Interceltique de Lorient**

The Festival Interceltique de Lorient is an annual cultural event held in Lorient in the Brittany region of France. Established in 1971 to celebrate and promote Celtic culture, it brings together artists, musicians, dancers, and folk groups from various regions. The festival features a diverse program that includes Celtic music performances, traditional dances, band and artist competitions, art exhibitions, lectures, parades, workshops, and family-friendly activities. Its main goal is to encourage dialogue and cooperation among different Celtic cultures, strengthening the bonds of friendship and shared identity among these peoples (Festival Interceltique de Lorient, 2023).

Several actions reflect the Festival Interceltique de Lorient's commitment to minimizing its environmental impact and promoting an enriching, responsible, and conscious cultural experience. These actions include waste management with the promotion of selective waste collection, recycling of waste and biowaste, and reducing disposable plastic. Sustainable gastronomy is valued, emphasizing local and organic products, a wide range of vegetarian dishes, and reducing food waste. Water-saving

measures and ecological cleaning practices are implemented, such as installing dry toilets, using certified products, and using ozonized aqueous solution. There is also an emphasis on promoting sustainable mobility, including using motor scooters for transporting some of the artists' equipment. The festival raises awareness among the audience through a dedicated space for promoting environmental best practices (Festival Interceltique de Lorient, 2023).

### **#22 Amsterdam Dance Event (ADE)**

The Amsterdam Dance Event (ADE) is an annual electronic music event founded in 1996 in the capital of the Netherlands. It is organized by the Amsterdam Dance Event Foundation, a non-profit organization committed to fostering electronic music, preserving its culture, and driving its industry globally. ADE offers a combination of conferences, festivals, and educational activities aimed at industry professionals, artists, entrepreneurs, producers, and fans. The festival takes place extensively in more than 140 locations in Amsterdam, offering a unique and multidisciplinary experience (ADE, 2023).

The organization is dedicated to stimulating growth, innovation, and potential, establishing a solid foundation for future generations through an egalitarian platform that celebrates diversity and supports culture while amplifying the voices of artistic expression, those facing injustices, unknown talents, and dance enthusiasts (ADE, 2023).

Part of the event's program is dedicated to environmental education through the ADE Green Conference, which integrates sustainability, innovation, and social change in the music industry through lectures by renowned professionals in the music industry, practical workshops, and a wide variety of panels on this theme (ADE, 2023). In 2019, ADE committed to evolving into a circular economy-based festival by 2025 through the Green Deal Circular Festival (GDCF), an initiative led by the Dutch Ministry of Infrastructure and Water Management that brings together European music festivals dedicated to adopting a circular production and consumption model and reducing their environmental impacts (GDCF, 2023). The official event portal, in addition to information about the ADE Green conference, does not provide clarifications or reports on its sustainability program.

### **#23 Country Music Association Festival (CMA Fest)**

The Country Music Association (CMA) Festival, also known as CMA Fest, was founded as a fan fair in 1972 to connect artists and audiences. It takes place annually in Nashville, Tennessee, United States, and brings together various renowned artists and new talents from the country music scene. The festival offers a unique experience for country music fans, with live performances on multiple stages, artist meet-and-greets, autograph opportunities, and music-related product exhibitions (CMA Fest, 2023).

It focuses its efforts on charity and social responsibility. Since 2006, it has allocated some of its proceeds to support various charitable organizations and music education initiatives through the CMA Foundation. Regarding sustainability, it provides free buses with strategic stops for participants who purchase tickets for all days of the event. However, personal mobility devices such as scooters,

bicycles, skateboards, rollerblades, and hoverboards are prohibited at the event venue (CMA Fest, 2023).

#### **#24 Rock Werchter**

Rock Werchter was founded in 1974 and takes place annually in Werchter, Belgium. It is known for its diversity of music genres, multiple stages, relaxation areas, varied food and beverage selection, the presence of renowned artists, quality facilities, and environmental responsibility values (Rock Werchter, 2023).

Their commitment to sustainability is reflected in their environmental actions and measures taken to reduce their ecological footprint. The event offers public transportation options such as trains and buses, while encouraging bicycle use and carpooling. They aim to reduce waste through reusable cups, recycling, and promoting the reuse of tents and camping equipment. Smart energy usage is a priority, including using green generators and partnering with the Bolt energy platform. They employ low water consumption sanitation facilities and promote the use of local and sustainable products, both in food and purchases. Inclusivity is valued, with access for people with special needs and social initiatives in place. They plant trees through the Bonsai payment app and support local and international projects. They raise awareness about their actions and collect data for future improvements. They endorse Live Nation Green Nation's commitment to reducing greenhouse gas emissions. Rock Werchter has received awards for its sustainable management and is continuously seeks to enhance its approach (Rock Werchter, 2023).

#### **#25 Lollapalooza Berlin**

Lollapalooza Berlin is an annual festival that has been taking place in Germany since 2015, organized by Live Nation. In addition to its diverse music lineup, the event features interactive thematic areas focused on fashion, exhibitions, artistic expressions, activities, and ecological responsibility (Lollapalooza Global, 2023).

Like music, art, and culture, sustainability concerns have been considered crucial elements since the early editions of the festival in Berlin. Therefore, a charter outlining commitments regarding climate preservation, resource efficiency, engagement, and social justice was conceived. This document undergoes constant revisions based on feedback and new ideas, always aiming for evolution, adaptation, and expansion. The objectives of this charter include promoting social justice through inclusion and barrier removal, celebrating diversity, integrating people from various backgrounds and social strata, advancing gender equality, raising awareness to ensure safety and well-being, and climate protection to preserve the live music experience for future generations (Lollapalooza Berlin, 2023).

The event acknowledges the importance of data collection to quantify its impacts and sets climate goals with objectives for different time frames. Lollapalooza Berlin also implements strategies to reduce energy consumption, promote sustainable travel alternatives, and use soft mobility. It does not provide car parking, adopts efficient waste management, including recycling and proper disposal for various

types of waste, offers drinking water refilling stations, favors the trade of reusable products or packaging, requires suppliers and partners to adhere to defined sustainability guidelines, collects rainwater for irrigation and manages wastewater, includes vegetarian, vegan, and locally sourced food, and collaborates with local and national initiatives (Lollapalooza Berlin, 2023).

In 2022, Lollapalooza Berlin initiated the process of being recognized as a sustainable festival according to DIN ISO 20121 through the independent certification entity GUTcert. The event is also part of Green Nation, the Live Nation sector responsible for sustainability. The festival faces challenges resulting from expanding activities but commits to the future. All data obtained during the event is examined concerning its negative impacts and alignment with the United Nations Sustainable Development Goals (SDGs). Furthermore, the festival aims to be a reference and inspire teams responsible for other festivals to follow its example (Lollapalooza Berlin, 2023).

### **#26 HARD Summer**

The first edition of Hard Summer took place in 2008 in Los Angeles, California, United States. The annual festival offers a diverse lineup of electronic and hip-hop music with world-renowned artists. It features innovative stages and grand stage production that incorporates visual elements, pyrotechnics, and special effects, creating an immersive experience for the audience (Hard Summer, 2023).

The festival demonstrates concern for the health and well-being of its attendees through strict control of the entry of dangerous equipment and drug use. It also provides support teams throughout the venue and multiple free hydration stations (Hard Summer, 2023). Hard Summer is produced by Insomniac, the same company that produces Electric Daisy Carnival (#6). Still, it cannot be confirmed that both events share the same sustainability tendencies, as the official Hard Summer website does not provide environmental or social responsibility information.

### **#27 Austin City Limits Music Festival (ACL)**

Austin City Limits (ACL), founded in 1974, initially started as a TV music program created to showcase the rich diversity of musical styles in Austin, Texas, United States. The program's success led to the establishment of an annual music festival featuring a diverse lineup of artists from various genres (ACL, 2023).

ACL collaborates with the Austin Parks Foundation to improve various parks, trails, and green spaces. Through the event's grant program, funding is provided for enhancements and renovations in green areas throughout the city, including investments in disadvantaged communities. Revenue generated through a percentage of ticket sales and other income sources also allows for hosting additional volunteer programs and events each year. The Austin Parks Foundation enables ACL to promote greater environmental responsibility by encouraging reduction, reuse, and recycling through programs like Rock & Recycle, which exchanges bags of recyclable materials for t-shirts, Diver It!, which educates participants about composting, recycling, and waste production, and the provision of refill stations for

drinking water, which helps reduce the accumulation of plastic materials (Austin Parks Foundation, 2023).

### **#28 Lollapalooza Chile**

Lollapalooza Chile was the first version of Lollapalooza outside of the United States, and it has been taking place in Santiago, Chile, since 2011 (Lollapalooza Global, 2023). The event aims to contribute to sustainability, primarily by setting a direct example for the audience (Lollapalooza Chile, 2023).

They have established a Sustainability Policy with guidelines and directives for both the production of the festival itself and engagement in external projects. The pillars governing this policy are people, the environment, and legacy, as they believe that through music, they can not only entertain but also inspire and educate the public. They work on ecological actions and hope that the mark left on the ecosystem can be positive. Through the "Espiritu Verde" initiative, they develop projects that define the festival's efforts, such as circularity (production and execution of projects that return to the usage chain), carbon footprint compensation (through the promotion of sustainable mobility, reducing the use of disposable plastic, recycling, and composting), Rock & Recycle (waste management and educational practice), and Explo Aldea Verde (exhibitions, workshops, and lectures in an area within the festival dedicated to environmental preservation). Additionally, they have a stage entirely powered by solar energy (Lollapalooza Chile, 2023). Lollapalooza Chile collaborates with Lotus, a company that seeks to develop the entertainment industry in Chile while maintaining high standards of accessibility, inclusion, and environmental care (Lotus, 2023).

### **#29 Leeds Festival**

Established in 1999, the Leeds Festival takes place annually at Bramham Park in Leeds, United Kingdom, and is held simultaneously with the Reading Festival. It features a diverse lineup with a wide variety of music genres from renowned and emerging artists. It also offers food and beverage areas, camping zones, campervan and caravan parking, and various entertainment activities (Leeds Festival, 2023).

The festival has a sustainability plan and a dedicated team to ensure the implementation of the outlined guidelines. The primary areas of influence include waste management, energy and transportation, food and beverage production, water usage, and impacts on the local ecosystem. Their reports indicate that energy consumption is this event's primary factor for greenhouse gas emissions. The strategy to mitigate its impacts involves reducing consumption and transitioning to renewable energy sources, aligning with the objectives of Leeds City Council's Best Council Plan 2020-2025 (Leeds Festival, 2023).

Other practices include promoting the use of sustainable mobility, public transportation, and vehicle sharing, developing a circular economy through waste regulations, providing reusable, renewable, and recycled materials, implementing measures to reduce the use of disposable plastics, offering recycling incentives, engagement campaigns, and encouraging campers to take their tents back home.

They collaborate with charitable organizations, encourage the consumption of products from local suppliers, with a focus on vegetarian and vegan options, raise awareness about the carbon footprint of food, redistribute surplus provisions, educate and empower their staff about sustainability initiatives and their importance (Leeds Festival, 2023). The practices adopted by Leeds will be presented in more detail through the sustainability report examined in subsection 4.4.3.

As specified in the Green Nation Sustainability Charter, the festival acknowledges its responsibility in preserving the live music experience for future generations. The organization recognizes its environmental impact and aims to communicate the extent of negative impacts and the necessary actions to mitigate them objectively and transparently. The Leeds Festival participates in Vision 2025, contributed to The Show Must Go On Reports in 2020 and 2015, joined Music Declares Emergency, manages its carbon footprint, achieved the highest rating in Julie's Bicycle's Creative Green Certification in 2019, and contributes to achieving United Nations Sustainable Development Goals (Leeds Festival, 2023).

### **#30 Stagecoach Music Festival**

It's a country music festival held in Indio, California, United States, produced by the company Goldenvoice, the same producer responsible for Coachella. Held since 2007, it features a lineup with prominent names in country music, including renowned artists and emerging talents. It offers a variety of activities and experiences for participants, such as food areas with typical Southern U.S. options, country merchandise shops, cell phone charging stations, rest and entertainment areas, and camping areas with exclusive tents and car and caravan parking (Stagecoach, 2023).

The Stagecoach Music Festival, in collaboration with Global Inheritance, a non-profit organization dedicated to inspiring positive changes in environmental and social issues through innovative approaches, promotes sustainable practices to reduce its environmental impacts, such as recycling incentives, water conservation, and carpooling (Stagecoach, 2023).

### **#31 Outside Lands Music and Arts Festival**

The Outside Lands Music and Arts Festival, created in 2008, takes place annually in Golden Gate Park, San Francisco, California, United States. To provide an immersive cultural experience, it combines various forms of artistic expression, culinary delights, technology, sustainability, and music of diverse genres (Outside Lands, 2023).

The festival incorporates several sustainability initiatives, such as encouraging the use of reusable containers with free water refill stations throughout the venue, partnering with Clean Vibes and the San Francisco Department of the Environment to promote recycling and proper waste disposal, as well as using 100% compostable food and beverage utensils. It includes an educational forum for sustainability and social awareness, replacing disposable plastic bottles with recyclable aluminum cans, promoting the use of local public transportation, shared rides, and alternative forms of mobility (discourag-

ing visitors from using cars to reach the venue due to limited parking availability in the area). Additionally, Outside Lands collaborates with local non-profit organizations, making donations to support social and environmental initiatives in the community. The Outside Lands Works is a charitable project that directs investments to enrich the cultural life of the Bay Area, with numerous partners running programs related to music and art education, violence prevention, environmental preservation, and more (Outside Lands, 2023).

### **#32 Rock in Rio Lisboa**

Rock in Rio Lisboa was founded in 2004 in Lisbon, Portugal, through the consolidation of the #11 Rock in Rio, which became a reference in the music industry (Rock in Rio Lisboa, 2023). Structured by the same organization, RiR and RiR Lisboa share ideals and set sustainability goals based on the same principles and objectives, but adapted to their individual demands. The practices adopted by RiR will be presented in more detail through the sustainability report examined in subsection 4.4.1.

In 2013, the festival obtained APCER 20121 certification - Sustainability management system for events, and in 2020, Rock in Rio Lisboa signed the Green Capital Commitment, joining the city of Lisbon in achieving environmental goals by the United Nations Sustainable Development Goals (Rock in Rio Lisboa, 2023).

### **#33 NOS Alive**

NOS Alive is an annual music festival in Lisbon, Portugal, since 2007. It stands out for its lineup featuring national and international artists from various music genres, attracting a diverse audience. The event offers an experience that combines live music, food areas, bars, resting areas, and entertainment. Furthermore, it emphasizes its commitment to sustainability through environmental initiatives and awareness of the negative impacts on the planet (NOS Alive, 2023).

NOS Alive has joined the Zero Waste movement. This initiative recovers surplus food from cafeterias, restaurants, and events, and since 2012 has already recovered more than 1.5 million meals that would have been discarded. One of the festival's main goals is to become greener through the implementation of measures such as promoting the use of public transportation, recycling practices, material reuse, operating electric vehicles, encouraging the use of reusable cups, controlling the distribution of giveaways, and environmental awareness campaigns (NOS Alive, 2023).

Sê-Lo Verde is an initiative of the General Secretariat for the Environment and the Portuguese Environmental Fund that encourages, values, and finances measures with positive social, economic, and environmental impacts at events in the country. Its main objectives include adopting good environmental practices, innovative technologies and ideas, environmental education, awareness, and criteria contributing to mitigating negative impacts (Environmental Fund, 2023). Since 2017, Sê-Lo Verde has supported some of the measures and good practices adopted by NOS Alive, such as the use of electric cars and bicycles, furniture made from recycled materials, energy control systems, a bus terminal supporting various public transport companies, an extra bus fleet to assist with the departure of the festival's

audience, the use of shared transportation, proper waste disposal, and encouraging participants to adopt more socially responsible behaviors (NOS Alive, 2023).

### **#34 SZIGET**

Founded in 1993, the Sziget Festival takes place annually on the island of Óbuda, Budapest, Hungary. The event features a variety of music genres, as well as various cultural and artistic expressions, entertainment activities, a camping area, and caravan parking. Regarding sustainability, Sziget has been working to implement more eco-friendly initiatives over the years. These initiatives include promoting the use of public transportation and sustainable mobility, providing recycling and composting areas, reducing the use of disposable plastics, using reusable containers, offering diverse and sustainable food options, carbon offset programs, encouraging the use of green camping zones, fostering sustainable development among participants, and collaborating with local organizations, businesses, and environmental interest groups to share knowledge about ecological issues (SZIGET, 2023).

Furthermore, since 2019, Sziget has partnered with the Green Deal Circular Festivals and is transitioning to a circular economy. In 2022, they published a public sustainability report to monitor their progress (SZIGET, 2023). The practices adopted by Sziget will be presented in more detail through the sustainability report examined in subsection 4.4.2.

### **#35 BoomTown Fair**

The Boomtown Fair is an annual music and arts festival in Hampshire, United Kingdom. It combines music from various genres, theater, interactive performances, art installations, and workshops, attracting a diverse audience for a deep and enriching experience (BoomTown, 2023).

The festival demonstrates a commitment to social and environmental issues, as well as promoting the circular economy through practices such as recycling and selective waste collection, efforts to reduce fossil fuel consumption, awareness about food waste, responsible water resource management, monitoring transportation data for the event's production, audience, and artists, encouraging the use of public transportation and shared travel, a preference for renewable energy use, ensuring accessibility and equal opportunities, and active community engagement. It also provides that a portion of its revenue goes to social causes, community projects, reforestation efforts, and environmental protection (BoomTown Fair, 2023). In 2019, BoomTown committed to transforming into a circular economy festival by 2025 through the Green Deal Circular Festival (GDCF). Furthermore, the event is dedicated to responsible procurement practices, having developed a Sustainable Procurement Policy for each area. Importance is also placed on recording and measuring to identify irregularities and analyze the data obtained to implement improvements (BoomTown, 2023).

### 4.3 Data collection

Some music festivals described in subchapter 4.2 have evident gaps in the information disclosed by their management, which can limit or distort the results and make it difficult to gain a realistic and comprehensive understanding. In this context, the disclosure of this data is of utmost importance because, in addition to providing a clear perspective on the dimensions of the event, it establishes a relationship of trust with participants, sponsors, and stakeholders. To fill these gaps, it is necessary to search for complementary sources of information such as sustainability reports, which, for the most part, are also not made available to the public. Therefore, attempts were made to directly communicate with the organizers or companies responsible for the festivals. Figures 4.9, 4.11, and 4.12 graphically depict the experience of contacting or attempting to contact 30 events, of which 25 are among the top 35 positions and five are scattered throughout the other hundred positions.

Figure 4.9 illustrates the results of the first attempt to contact the festivals directly, which was carried out via email directed to the addresses available on the official event pages or social media dedicated to the event. The communicated message was the questionnaire available in Annex A. A total of 86.67% of the festivals did not respond to the questions asked. Among these, 13.33% claimed that many students made these inquiries, so there would not be enough time to respond to all of them (Figure 4.10). Thirty percent did not respond to the email, 26.67% of the events do not currently provide any email addresses or contact forms, or their inboxes are full, causing the sent message to be returned, and 16.67% responded only with automatically programmed messages. The obtained responses are available in Annexes E, F, and G.

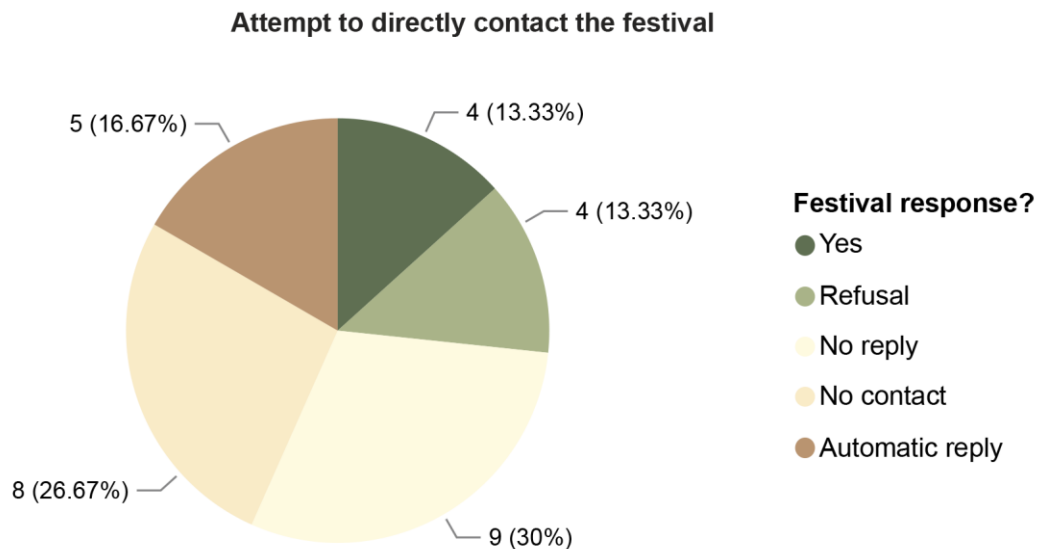


Figure 4.9 Attempt to directly contact the festival (author).

There is a demand from the scientific community regarding music festivals and their environmental impacts. Given a response rate of only 13.33% (Figure 4.9), it became necessary to seek other means of obtaining more information. Some music festivals are produced by companies such as Insomniac and Live Nation, and in the absence of direct responses from the events, attempts were made to contact these organizing companies, but no response was obtained (Figure 4.10). Emails were not sent to the organizers of events that had already provided feedback.

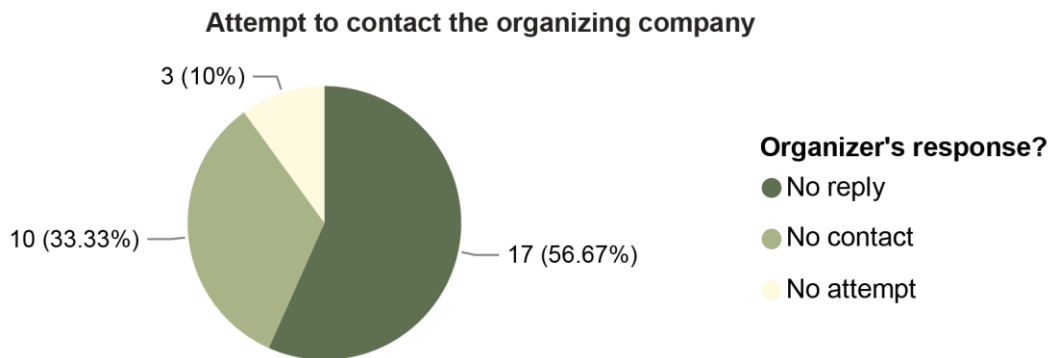


Figure 4.10 Attempt to directly contact the organizing company (author).

A third attempt to contact was made through social media platforms such as Instagram and LinkedIn. A brief message was sent to all music festivals that accept direct messages to inform them about the research topic and request a communication channel with someone responsible for sustainability. Notably, 10% of the inboxes were blocked for messages from the general public, preventing any form of communication (Figure 4.11).

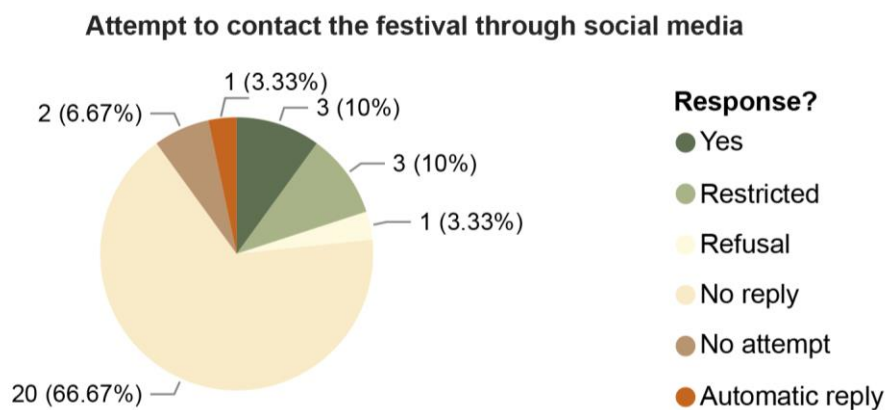


Figure 4.11 Attempt to contact the festival through social media (author).

The data collected during the contact attempts and through the official event pages reveal that only 11.43% of music festivals make their sustainability reports available for public access. Another 11.43% of the total are certified, including Primavera Sound, certified by the Greener Festival Awards,

Rock in Rio and Rock in Rio - Lisbon certified by Apcer ISO 20121, and Leeds Festival certified by Creative Green Certification (Table 4.3). Lollapalooza Berlin indicates that it is in the process of certification under DIN ISO 20121 and that its sustainability report will be published soon. Lollapalooza Chile also reports a similar publication process.

Table 4.3 Sustainability actions and goals, availability of reports and certificates (author).

| Nº | Event name                           | Actions and goals                | Report | Certificate |
|----|--------------------------------------|----------------------------------|--------|-------------|
| 1  | Donauinselfest                       | Environmental protection         |        |             |
| 2  | Street Parade                        | GREEN                            |        |             |
| 3  | Mawazine Rabat                       | Not found                        |        |             |
| 4  | Montreal International Jazz Festival | Actions de développement durable |        |             |
| 5  | Pol'and'Rock Festival                | EcoFestival                      |        |             |
| 6  | MDLBEAST Soundstorm                  | Not found                        |        |             |
| 7  | Electric Daisy Carnival (EDC)        | Not found                        |        |             |
| 8  | Primavera Sound                      | Sustainability actions           |        | ✓           |
| 9  | Edinburgh Festival Fringe            | The Fringe development goals     |        |             |
| 10 | ESSENCE                              | Not found                        |        |             |
| 11 | Lollapalooza Argentina               | Espíritu Verde                   |        |             |
| 12 | EDC Mexico                           | Not found                        |        |             |
| 13 | Rock in Rio                          | Por um mundo melhor              | ✓      | ✓           |
| 14 | Tomorrowland                         | Love tomorrow                    |        |             |
| 15 | Lollapalooza USA                     | Rock & Recycle                   |        |             |
| 16 | Lollapalooza Brazil                  | Rock & Recycle                   |        |             |
| 17 | EDC Orlando                          | Not found                        |        |             |
| 18 | Summer Sonic                         | Not found                        |        |             |
| 19 | Coachella Valley Music and Arts      | For Our Planet                   |        |             |
| 20 | UNTOLD Festival                      | Not found                        |        |             |
| 21 | Festival Interceltique de Lorient    | Developpement durable            |        |             |
| 22 | Amsterdam Dance Event (ADE)          | ADE Green                        |        |             |
| 23 | Country Music Association Festival   | CMA Fest is staying green        |        |             |
| 24 | Rock Werchter                        | Werchter Rocks Green             |        |             |
| 25 | Lollapalooza Berlin                  | The Green Neighbourhood          |        |             |
| 26 | HARD Summer                          | Not found                        |        |             |
| 27 | Austin City Limits (ACL)             | Rock & Recycle                   |        |             |
| 28 | Lollapalooza Chile                   | Rock & Recycle                   |        |             |
| 29 | Leeds Festival                       | Staying green                    | ✓      | ✓           |
| 30 | Stagecoach Music Festival            | Sustainability                   |        |             |
| 31 | Outside Lands Music and Arts         | Sustainability                   |        |             |
| 32 | Rock in Rio - Lisbon                 | Por um mundo melhor              | ✓      | ✓           |
| 33 | NOS Alive                            | Not found                        |        |             |
| 34 | SZIGET                               | Green Sziget                     | ✓      |             |
| 35 | Boomtown Fair                        | Green Mission                    |        |             |

## **4.4 Case studies**

In the data collection process, some information and sustainability reports were obtained. This chapter analyzes five music festivals adopting a more transparent environmental responsibility approach. In this context, the reports are examined to understand the scope of the generated impacts and the main measures implemented to mitigate the damages. Additionally, it aims to identify future goals to comprehend how festivals can contribute to a more conscious and responsible scenario. The investigation is conducted based on a segmented approach of the categories presented individually in their reports. Each category represents a fundamental aspect of sustainability and allows for examining their consequences across various dimensions, identifying shortcomings, and ensuring that the positive impacts are even more significant.

### **4.4.1 Rock in Rio (Brazil) & Rock in Rio Lisboa (Portugal)**

Rock in Rio and Rock in Rio Lisboa are managed by Rock World and share their culture, objectives, and goals. The sustainability report of both events is presented in an integrated manner and includes categories divided into goals, people, planet, and profit. The analyses in this research will primarily emphasize factors related to environmental responsibility and ecosystem protection. In 2022, considering both editions, there were 1,514 artists and 987,000 participants during 11 days of music (Rock in Rio, 2022a).

#### **Sustainability Policy**

Rock in Rio is committed to leaving a positive and lasting legacy in the community where the festival takes place. We promote the creation of sustainable practices that generate economic, social, and environmental value, both directly and indirectly, involving all stakeholders to achieve the goal of Rock in Rio for a Better World. The events consider health, safety, comfort, accessibility, inclusion, and well-being, while complying with all applicable regulations. We establish processes for engagement, a schedule of content and entertainment, and the provision of information to be inclusive and accessible to all stakeholders. We strive to ensure transparency and integrity in commercial transactions, labor agreements, and institutional commitments, along with a long-term commitment to promoting and preserving management based on continuous improvement, providing all the necessary resources and knowledge to achieve sustainability goals (Rock in Rio, 2022).

#### **Sustainability Objectives**

Through extensive research involving market agents, researchers, and professors, and based on the United Nations Sustainable Development Goals, Rock in Rio has established six goals for 2030. These objectives are as follows: to train 100,000 people, eliminate waste sent to landfills in all editions, reduce food waste in all editions, engage all partners with our sustainability policy, be an event that is

diverse, inclusive, and accessible, and ensure the total safety, health, and well-being of everyone involved in organizing the festival (Rock in Rio, 2022a).

## **People**

The people category involves a range of individuals associated with the event, both directly and indirectly, such as stakeholders, the work team, volunteers, the public, partners, and individuals benefiting from social initiatives. Rock in Rio develops various campaigns associated with people, such as risk management, regarding the distribution of alcoholic beverages to minors at the two festival venues, monitoring of the ecosystem in which the Rio de Janeiro event is located, educational signage about water distribution and consumption, and alerts regarding abuse directed at women. The festival conducts various activities, campaigns, lectures, and training in collaboration with partner companies that share its sustainability values and offer awards to those who stand out. Additionally, it is committed to providing a work environment that promotes health, well-being, and safety. Inclusion and diversity are also crucial points for Rock in Rio, which offers support and services tailored to people with disabilities or low income, including the provision of tickets, materials, food, and the implementation of accessible infrastructure on-site to enable positive experiences for all audiences (Rock in Rio, 2022a).

## **Planet: Carbon Footprint**

Since 2016, Rock in Rio has been tracking its carbon emissions associated with transportation, energy consumption, waste management, and accommodations. Between 2006 and 2015, some reforestation projects and industrial adaptation of polluting factories were used to mitigate the generated emissions. The report indicates that over half of the carbon footprint is associated with the transportation of the audience to the event (Table 4.4). Figure 4.12 represents an overall distribution of GHG emissions from Rio de Janeiro and Lisbon, combined, in the year 2022, and it is noted that, despite the implementation of measures to reduce these emissions, it was not possible to decrease the carbon footprint (Rock in Rio, 2022a).

The data unveils noteworthy fluctuations in the carbon footprint between different editions of the festival held in Lisbon and Rio de Janeiro throughout the year. These fluctuations serve as a compelling reminder of the intricate challenge that comes with mitigating the environmental impacts of a large-scale music festival. The discernible disparities across various emission categories underscore the multifaceted nature of these impacts, influenced by a range of factors such as existing infrastructure, local transportation patterns, governmental policies, and the accessibility of renewable energy sources. It is particularly striking to note that the most substantial emissions stem from audience transportation, emphasizing how the geographic location and transportation infrastructure of host cities can exert a direct and profound influence on overall emissions. Interestingly, the substantial reduction in emissions related to the transportation of staff, sponsors, and suppliers in Rio de Janeiro from 2019 to 2022, as detailed in Table 4.4, suggests the successful implementation of effective strategies aimed at curbing emissions in these categories. This highlights the potential for transformative change and underscores the importance of proactive sustainability measures in event planning and management.

Table 4.4 Carbon footprint (ton) - Rock in Rio 2022 (Rock in Rio, 2022a; Rock in Rio, 2022b).

| Categories   | Unit | Lisbon |       | Rio de Janeiro |        |
|--|------|--------|-------|----------------|--------|
|  |      | 2018   | 2022  | 2019           | 2022   |
| Audience transport                                   | ton  | 4,376  | 2,754 | 35,995         | 48,518 |
| Transportation for RiR teams, sponsors and suppliers | ton  | 430    | 148   | 26,925         | 717    |
| Transportation of artists equipment and cargo        | ton  | 390    | 212   | 370            | 365    |
| Fuel consumption                                     | ton  | 203    | 146   | 336            | 419    |
| Energy consumption                                   | ton  | 41     | 42    | 185            | 223    |
| Waste management                                     | ton  | 3      | 20    | 836            | 533    |
| Unspecified  | ton  | N/D    | 588   | N/D            | 9,562  |
| Total  | ton  | N/D    | 3,910 | N/D            | 60,337 |

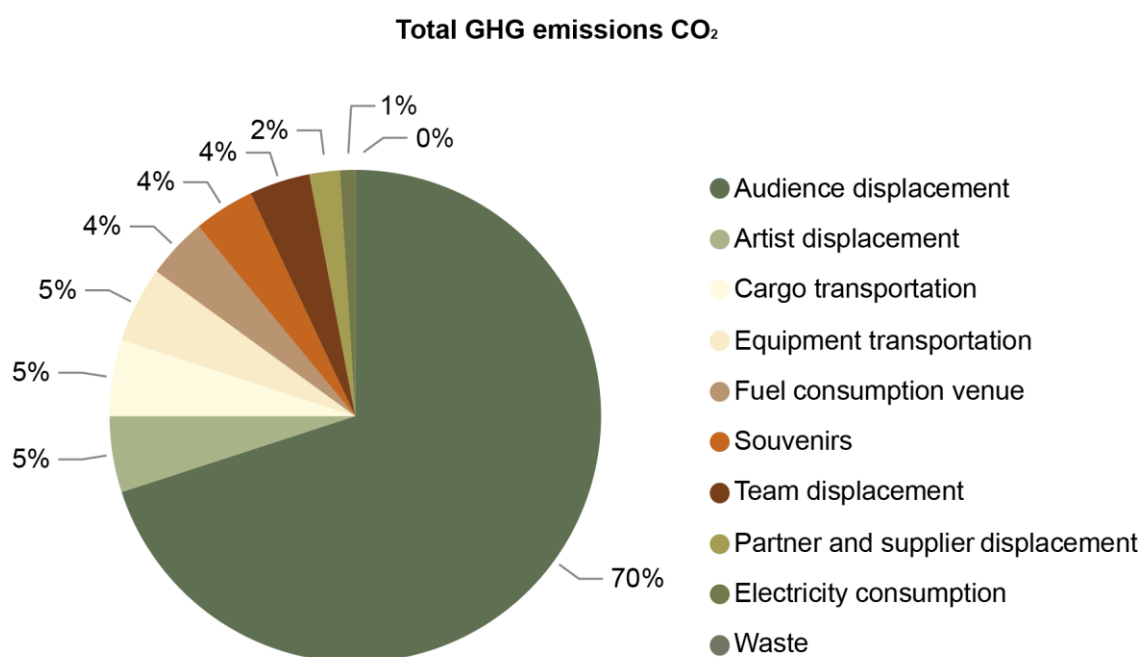


Figure 4.12 Total GHG emissions CO<sub>2</sub> (%) – RiR 2022 (Rock in Rio, 2022a).

The increases highlighted in Table 4.4 can be attributed to higher energy demand, event expansion, changes in energy sources, alterations in local waste treatment infrastructure, and fluctuations in participant consumption and disposal patterns. Therefore, the importance of ongoing strategies that consider the diversity of scenarios and people is emphasized, as well as the exploration of new technologies and engagement with stakeholders to ensure consistent reductions in GHG emissions.

The analysis of the Figure 4.13 reveals that most of the festival's attendees opt for the use of passenger cars over public transportation. When examining the emissions of gases associated with air travel, it becomes evident that the 8% portion assumes an extremely significant relevance for environmental concerns. It is important to highlight that only approximately 28% of the population chooses transportation modes such as buses, subways, or trains, signaling the need for public policies and greater efforts in raising awareness about the impacts associated with transportation.

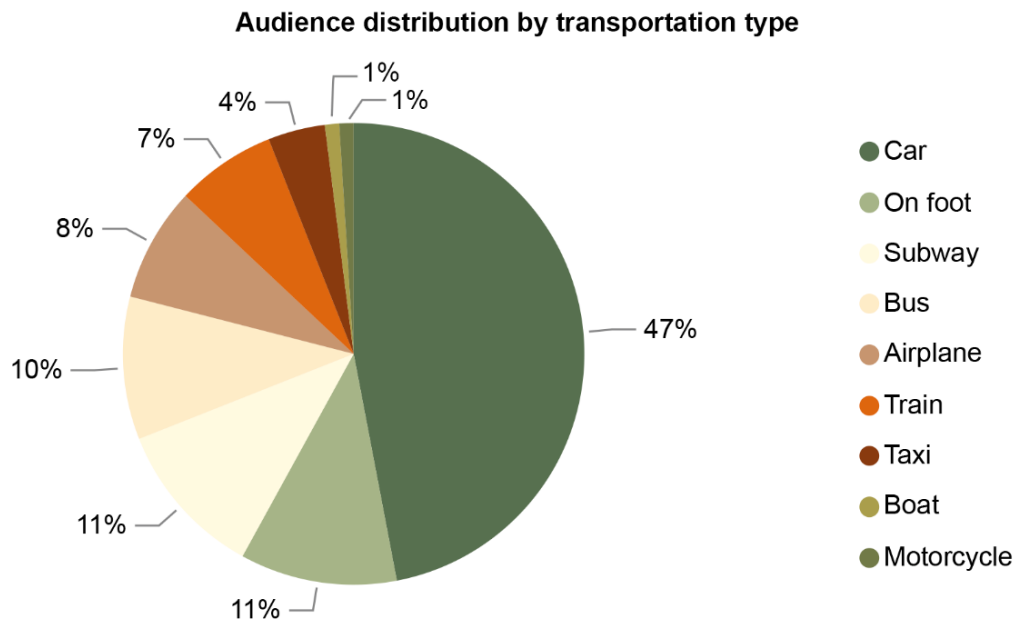


Figure 4.13 Audience distribution by transportation type – RiR 2022 (Rock in Rio, 2022a).

### Waste management

The 2022 editions were marked by an emphasis on optimizing waste management plans and introducing improvements to achieve innovative results. Several partnerships were established in both cities to support this process, including collaborations with Sociedade Ponto Verde, COMLURB, Instituto Libertas, Heineken, Coca-Cola, Natura, and Doritos. These collaborations enabled the implementation of various comprehensive and interactive actions involving the public and contributing to the success of waste collection (Rock in Rio, 2022a).

The Lisbon edition highlights other sustainable waste management practices, such as collecting and recycling cooking oil, corks, coffee grounds (composting), coffee capsules, and water bottles. A campaign for collecting 100% recycled water bottles was conducted in partnership with Água Serra da Estrela and Sociedade Ponto Verde, which planted 4,667 trees in exchange for 140,000 collected bottles. Although there was no specific collection of cigarette butts, awareness was raised for proper disposal with the distribution of appropriate bags. Figure 4.14 illustrates the composition of 128 tons of waste produced at the 2022 Rock in Rio Lisbon edition (Rock in Rio, 2022a).

### Rock in Rio Lisboa - waste (ton)

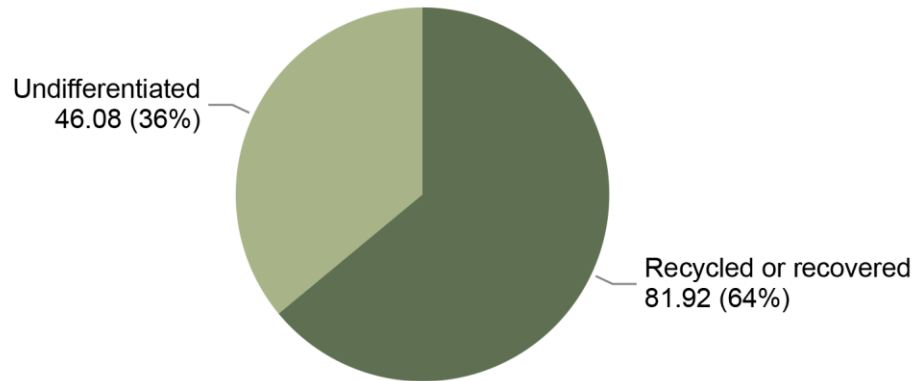


Figure 4.14 Rock in Rio Lisboa - waste (ton) – RiR 2022 (Rock in Rio, 2022a).

Engaging the public actively in waste management has consistently been a primary challenge during the Rio de Janeiro editions of the festival. In 2022, innovative approaches were implemented to tackle this challenge, including interactive initiatives to educate the public on waste separation and recycling, the use of animated videos for awareness, the deployment of composting teams to reduce organic waste contamination, the introduction of blockchain technology for waste tracking, the employment of cooperatives to ensure proper waste separation, and the inclusion of environmental technicians to enhance the efficiency of recyclable materials sorting. These multifaceted strategies underscore the festival's commitment to fostering a culture of sustainability and responsible waste management among its attendees.

In Figure 4.15, we gain valuable insights into the diverse waste streams at the Rio de Janeiro festival in 2022. The waste typologies depicted encompass a wide range of materials, including aluminium, construction and demolition debris, glass, non-recyclable items, organic matter, paper and cardboard, plastic, and wood. Collectively, these materials accounted for a substantial waste generation totaling 256.2 tons (Rock in Rio, 2022a). This comprehensive breakdown of waste categories underscores the complexity of waste management at large-scale events.

The examination of various waste management practices is crucial, as each event must tailor its approach to the unique demands and attributes of its hosting location. Different environments come with their distinct dynamics, existing infrastructure, and regulatory frameworks, necessitating customized solutions. For instance, the requirements for a festival in an urban setting can significantly diverge from those in a rural context, with the surrounding population's cultural and behavioral factors further influencing the choice of strategies. Recognizing these diverse considerations is fundamental to designing effective and context-specific waste management plans that align with the festival's goals and the characteristics of its host location.

### RiR Rio de Janeiro - Total waste (kg)

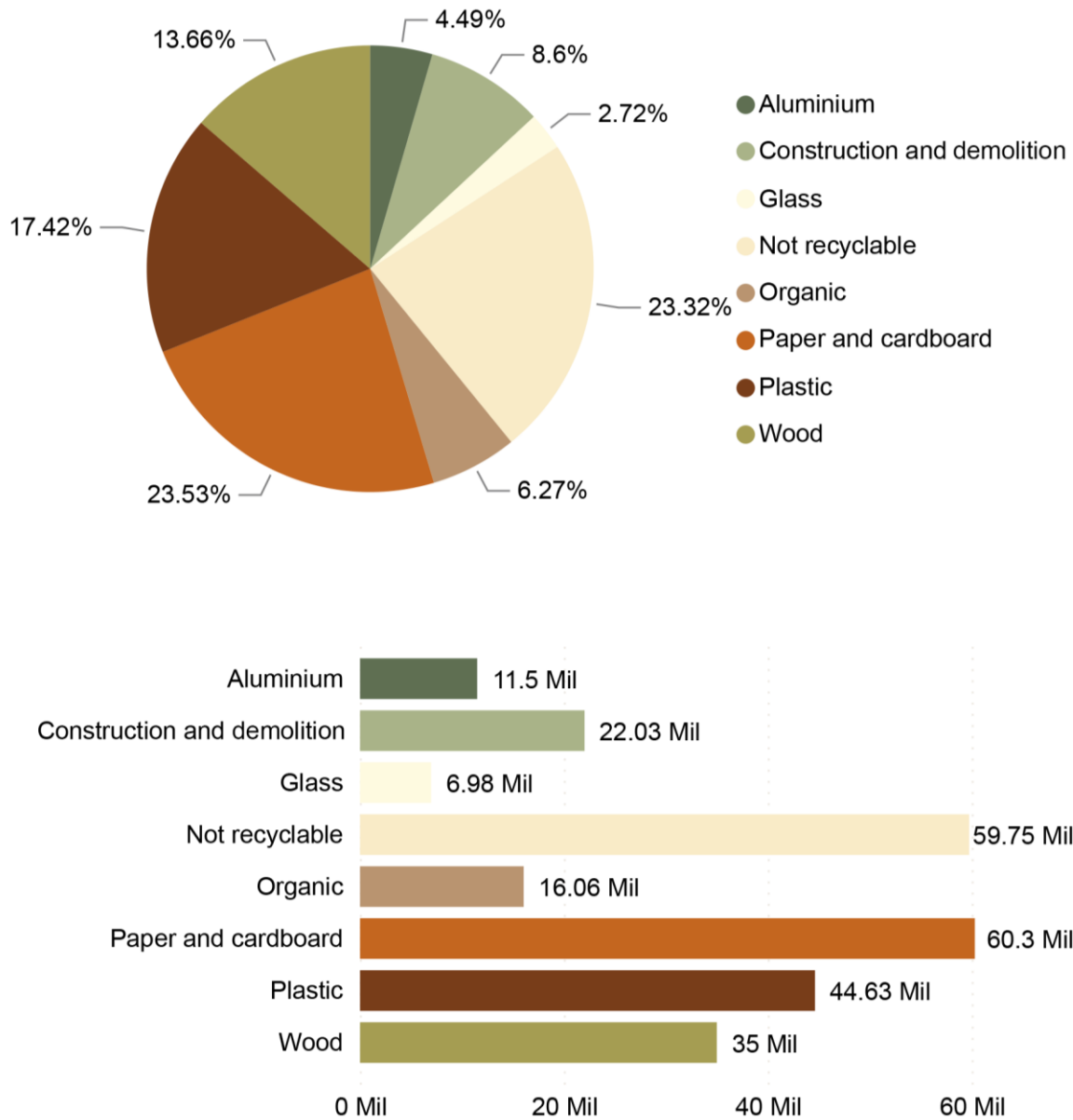


Figure 4.15 Rio de Janeiro - Total waste (kg) – RiR 2022 (adapted from Rock in Rio, 2022a).

### Mobility

For each edition, Rock in Rio implements an Integrated Mobility Plan to ensure the safety and comfort of each journey of the public to and from the event. This strategy involves partnerships with public transport operators who create routes and schedules tailored to the visitors' needs and communication campaigns developed by various partners, press conferences, and detailed information on the festival's official website (Rock in Rio, 2022a).

While many events emphasize waste reduction, attendees' travel is responsible for the most significant contribution when considering carbon emissions. For example, at Rock in Rio, spectator transportation generates about 90 times more carbon emissions than the waste produced. At the same time, this difference is even more significant in the Lisbon edition, with approximately 137 times more emissions coming from audience transportation.

Figure 4.16 illustrates the breakdown of the audience benefiting from the Mobility Plan in Rio de Janeiro (50% of the total), where the "First Class" option refers to an optional contracted executive bus that provides exclusive routes for entering and exiting the festival. The "Rock Express" is characterized by regular buses that operate at specific times and connect intermodal terminals in the city (Rock in Rio, 2022a).

**Public benefited from Mobility Plan - Rio de Janeiro 2022**

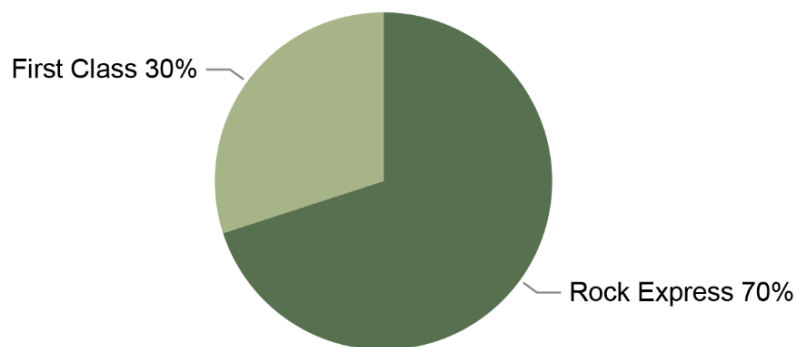


Figure 4.16 Public benefited from Mobility Plan - Rio de Janeiro – RiR 2022 (Rock in Rio, 2022a).

In Lisbon, the car remained the most commonly used means of transportation; however, the Sustainability Report indicates that approximately 40% of the audience took advantage of the options promoted by the implemented Mobility Plan (Figure 4.17) (Rock in Rio, 2022a).

**Most popular means of transport - Lisbon 2022**

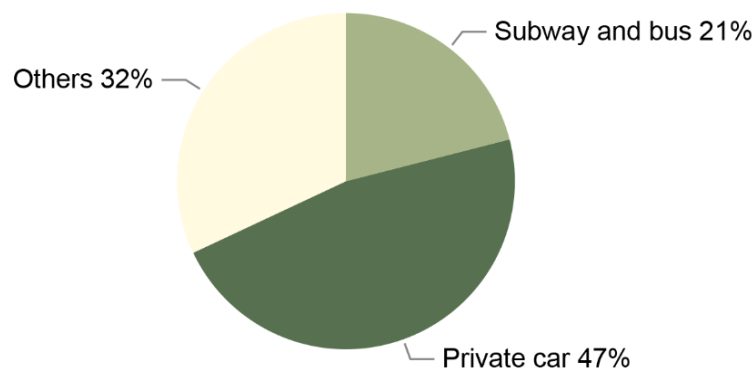


Figure 4.17 Most popular means of transport - Lisbon – RiR 2022 (Rock in Rio, 2022a).

Rock in Rio acknowledges the importance of public awareness and focuses on providing more precise and comprehensive information about the available transportation options. Its primary goal is to empower the audience to positively contribute to reducing the environmental impact, creating a more conscious and engaged experience at the event (Rock in Rio, 2022a).

## Energy

Rock in Rio seeks to ensure a reliable energy supply through careful planning, prioritizing using efficient energy sources connected to the electrical grid whenever possible. In the 2022 editions, in Lisbon, measures such as reducing machines and grid connections led to an 11% decrease in fuel consumption, and in Rio de Janeiro, the installation of a new substation allowed for more areas to be powered, resulting in a reduction of approximately 30,000 liters of diesel. This approach balances energy needs and environmental responsibility (Rock in Rio, 2022a).

The data presented in Table 4.5 pertains specifically to the editions held in Rio de Janeiro. Due to the expansion of the festival venue, an increase was observed in all metrics; however, it is noteworthy that carbon emissions resulting from energy consumption remain at a relatively low level, representing, on average, only 2% of the total emissions associated with the event in the city (Rock in Rio, 2022a).

Table 4.5 Energy - Rio de Janeiro – RiR 2022 (Rock in Rio, 2022a; Rock in Rio, 2022b).

| Type                  | Units          | 2019      | 2022      | % change 2019 vs 2022 |
|-----------------------|----------------|-----------|-----------|-----------------------|
| Energy availability   | kW             | 34,000    | 34,405    | +1.19%                |
| Electrical cables     | km             | 110       | 130       | +18.18%               |
| Energy source points  | points         | 4,350     | 4,500     | +3.45%                |
| Water pipes           | km             | 40        | 44        | +10%                  |
| Energy consumption    | kWh            | 2,460,971 | 2,490,889 | +1.21%                |
| Water consumption     | m <sup>3</sup> | 16,200    | 16,500    | +1.85%                |
| Petroleum consumption | liters         | 147,477   | 177,976   | +20.68%               |

## Water

Water management is also part of Rock in Rio's sustainable approach. All liquid waste considered safe is directed through the sewage network to treatment plants. At the same time, there is strict monitoring of the water consumption by the public, which comes from bottled sources and is subject to regular analysis. The event conducts educational campaigns to encourage responsible water use and provides water fountains throughout the event area. Additionally, in Rio de Janeiro, the festival uses non-potable water for irrigating the vegetation that remains on-site after the event. These measures aim to minimize environmental impacts and maximize the use of water resources (Rock in Rio, 2022a). In Lisbon, Rock in Rio implemented a permanent sanitation infrastructure that connects restrooms to a

sewage network integrated with a wastewater treatment plant, providing comfort to participants and ensuring effective waste treatment (Rock in Rio, 2022b).

### **Profit**

The festival stimulates the local and national economy by creating temporary jobs and boosting the hospitality sector, restaurants, and transportation services. Additionally, the event takes a proactive approach to social and environmental issues. It dedicates spaces to addressing topics relevant to society, such as diversity, healthy and sustainable eating habits, and visions of future cities. The commitment to human development is evident through investments in education, training, and certification of individuals, contributing to professional development and enhancing the quality of services provided during the event. Social responsibility is expressed through directing resources toward social and ecological causes, demonstrating a commitment to giving back to the community and solidifying the event as an agent of positive transformation on multiple fronts (Rock in Rio, 2022a).

#### **4.4.2 SZIGET (Hungary)**

Sziget presents more than a thousand shows on sixty stages over six consecutive days, and in 2022, it attracted a diverse audience of around 171,000 people from over a hundred countries. Its sustainability report analyzes social, economic, and environmental aspects of the event in 2022 and uses relevant United Nations Sustainable Development Goals for festivals as the basis for its own goals. The document highlights that it lacks sufficient data to provide a complete report, as the year 2022 was unusual due to COVID-19, budget cuts, and a late start in report execution. The data collected comes from interviews with employees, suppliers, and the audience, stakeholder surveys, and observations during the event (Sziget, 2022).

#### **SDG 3. Good Health and Well-Being**

Regarding safety and hygiene, the event establishes pre-festival sanitation infrastructure to ensure safer working conditions. Their crowd management strategies include changes in entrances and exits to avoid crowds, as well as a strategic stage schedule to distribute the audience. The event also increases public transportation, especially during peak hours, to handle the flow of people. Security is provided through an equipped control room, with police, firefighters, surveillance cameras, and a security manager (Sziget, 2022).

Sziget does not have mental health initiatives for its employees but offers accommodations, a peaceful working environment, and meals. For the audience, they provide the "Everness Chill Garden," which offers activities such as lectures, discussions, and concerts to promote awareness of various topics, including sustainability (Sziget, 2022).

The report highlights areas for improvement regarding the provision of a mental health professional for employees and raising public awareness about excessive drug and alcohol use. A rating of 9/10 is assigned (Sziget, 2022).

### **SDG 5. Gender Equality**

The Sziget Festival determines its lineup based on the commercial success of artists. In 2022, 72% were men, and 28% were women. Whenever possible, they aim for a more gender-balanced lineup but do not intend to implement specific quotas to avoid harming their success. Overall, more women (56%) than men (44%) work at Sziget, except in senior management positions, where men fill all positions. Salaries are equal for the same positions; however, they do not plan to implement initiatives to improve gender equality internally as they believe it is not necessary (Sziget, 2022).

During the festival, a medical center is available in cases of sexual abuse, and security is provided for potentially suspicious situations. However, the company has no internal training to detect and respond to abuse situations. Sziget does not have data on sexual assaults and violations because, despite the police having these records, they do not share them (Sziget, 2022).

Areas for improvement include raising employee awareness about gender equality, training them on detecting sexual abuse and how to respond in such situations, implementing initiatives for women to fill senior management positions, initiating an anti-assault campaign during the festival with dedicated space to raise awareness about sexual assaults and provide support to victims. The festival needs to collect and provide data to assess gender equality in the lineup and information on incidents of sexual abuse, assaults, and violations during the event. A rating of 6/10 is assigned (Sziget, 2022).

### **SDG 6. Clean water and sanitation**

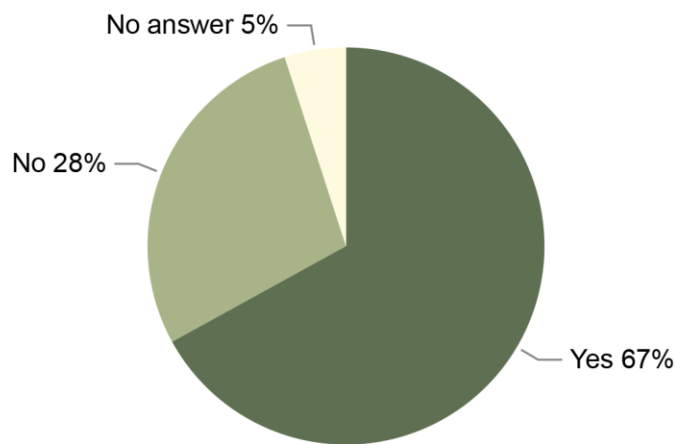
In 2022, the festival: provided twenty drinking water stations for the public, thirteen more than the previous year, and plans to increase it to forty in 2023; sold 298,000 water bottles; had 50% chemical and 50% non-chemical toilets (constructed by the municipality and connected to the sewage system), whereas in the past, the ratio was 70% non-chemical and 30% chemical, to reach 80% non-chemical and 20% chemical; consumed a total of 13,411,000 liters of freshwater and 185,000 liters of rainwater/Danube River water. The reference year posed challenges due to an extreme drought in Budapest, which increased dust levels during the festival and forced the organizers to use Danube River water for dust control and mitigation (Sziget, 2022).

Areas for improvement include eliminating the use of plastics, increasing the number of drinking water stations, exploring more sustainable toilet options (compostable or dry toilets), investigating the conversion of urine into graywater and feces into compost, and improving the provision of data on water and materials used in toilets. A rating of 6/10 is assigned (Sziget, 2022).

## SDG 7. Affordable and clean energy

Sziget's energy is 100% sourced from the electrical grid, so the festival does not have many energy-saving initiatives. However, it does have generators as backup, and in 2022, it used a total of 379,960 kWh. Among the few energy-saving initiatives mentioned in the report it states that the office stopped using air conditioning and switched to LED lighting. The energy supply to food vendors is limited, and if they exceed their limits, they must pay for the additional usage. Regarding the use of fossil fuels, it is estimated that in 2022, food vendors consumed 3,394 kg of natural gas (69% of vendors consume no natural gas) and used a total of 3,559 liters of transportation fuel (approximately 40% use between one and forty liters) (Figure 4.18) (Sziget, 2022).

### Initiatives to reduce gas consumption - caterers (2022)



### Current initiatives to reduce gas consumption - caterers (2022)

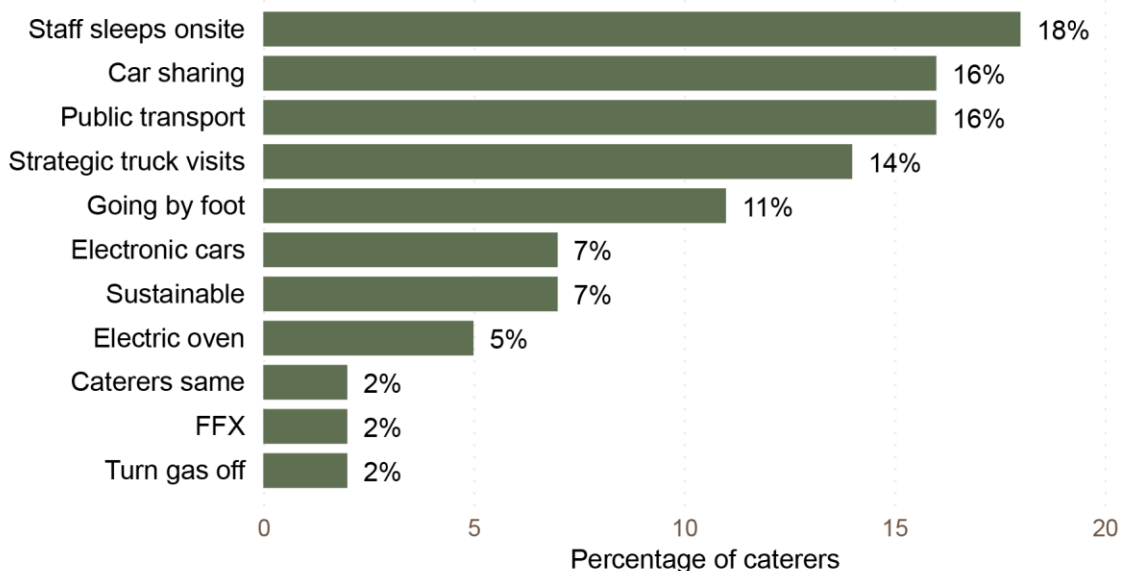


Figure 4.18 Current initiatives to reduce gas consumption – caterers – Sziget 2022 (Sziget, 2022).

Recommendations for improvement include implementing energy reduction initiatives through more efficient systems, turning off lighting whenever possible, communicating the importance of this reduction to all stakeholders, providing recommendations, and setting goals. Seeking sponsors for renewable energy initiatives, and measuring and communicating the carbon footprint, is also recommended. It is essential to obtain detailed data from all involved parties. A rating of 7/10 is assigned (Sziget, 2022).

### **SDG 8. Decent and economic growth**

Sziget is the main tourist event in Hungary, and its economic impact on the region is notable. Its partnership with the National Tourism Agency offers advantages to participants, such as free public transportation, free entry to public baths or beaches, discounts on car rentals, and tours. The festival also holds concerts in the city center, increasing engagement with the audience and boosting commerce. It has social and cultural influence, promoting debates on issues like LGBTQ+ rights and immigration. However, environmental concerns arise as the natural area of the island where the event takes place is negatively affected due to the large influx of people, trucks, and campsites, among others. The festival's sounds impact neighbors and wildlife, requiring noise control measures (Sziget, 2022).

In the context of Sziget, while the festival does offer platforms for emerging musicians, there is a noticeable limitation in the participation of Hungarian artists, as reflected in Figure 4.19. To enhance the festival's cultural richness and community engagement, it is advisable to forge stronger partnerships with local artists, providing them with increased opportunities and visibility on the global stage. Although Sziget already showcases significant positive impacts, there remains room for further development by fostering deeper connections with both the natural environment and the local culture. In acknowledgment of its efforts and potential for growth, a rating of 7/10 has been assigned to the festival's sustainability initiatives (Sziget, 2022).

**Line-up Sziget: nationality (2022)**

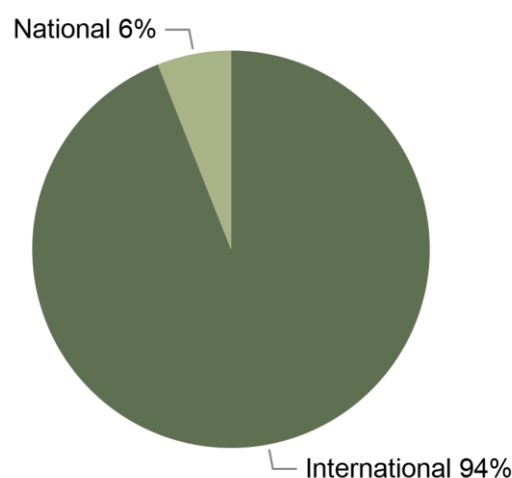


Figure 4.19 Line-up Sziget: nationality (2022) (Sziget, 2022).

## SDG 10. Reduced inequalities

The artists' origin spans over sixty countries, reflecting the diversity and representation of various groups. However, the selection of these artists does not actively consider ethnic origin and prioritizes commercial success. The festival also does not measure the ethnic diversity of its employees, indicating a greater need for awareness and education on this topic. The challenge of economic inequality is evident in the differences in prices between daily passes (purchased mainly by Hungarians) and festival passes (purchased by foreigners). Additionally, the age range is diverse, with the majority falling between 18 and 25 years old (Figure 4.20) (Sziget, 2022).

### Audience age (2022)

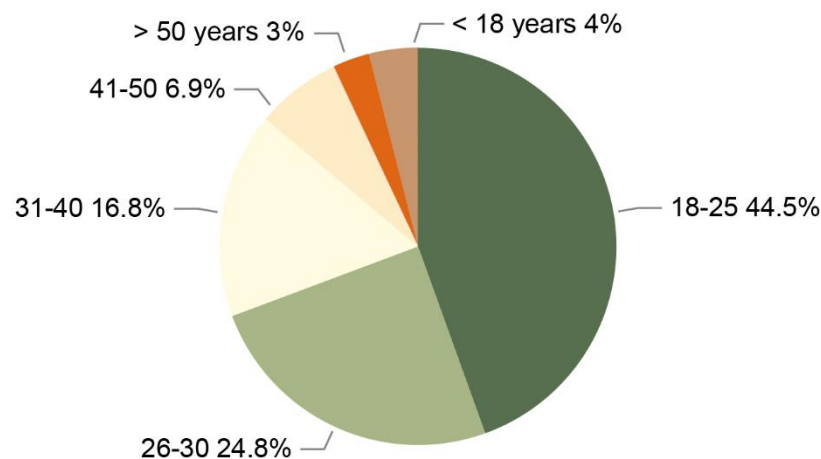


Figure 4.20 Audience age – Sziget 2022 (Sziget, 2022).

Sziget aims to ensure accessibility for all by providing ramps to improve mobility, collaborating with companies that assist people with visual impairments, and offering solutions for people with diabetes. However, promoting the festival's initiatives could be improved to attract a more diverse audience. Suggestions for improvement include diversifying the program, appointing a diversity and inclusion ambassador, increasing public awareness, communicating in English, offering more accessible food and beverage options, and data collection. A rating of 8/10 has been assigned (Sziget, 2022).

## SDG 11. Sustainable cities and communities

Suppliers constitute a significant part of the festival, with 70% to 80% being local. Although sustainability is mentioned in the contracts, many of these providers do not have a comprehensive understanding of this issue. Finding sustainable companies in Hungary and neighboring countries is challenging. The primary factor in selecting these suppliers is proximity, but the festival could invest in some education on environmental responsibility (Sziget, 2022).

Sponsors are chosen based on sustainability initiatives but not necessarily because they are sustainable companies; often, there is a lack of knowledge in evaluating this factor. Improvements can

be made through the education of suppliers, partners, and sponsors, the inclusion of environmentally responsible obligations in contracts, and the establishment of a music city strategy. To better address SDG 11, Sziget should promote sustainability at all stages of the event. A rating of 8/10 has been assigned (Sziget, 2022).

### SDG 12. Responsible consumption and production

Sziget works with three waste management companies and separates waste into categories such as PET/aluminum, glass, compost, and cardboard. Figure 4.21 represents the distribution of trash bins at the festival by quantity and type of waste to be deposited. Various collection points are set up, but there are areas that need improvement, such as coordination among the waste management companies and the lack of public awareness, leading to errors in the separation of organic waste. The issue of food waste and packaging is also addressed, and a pilot program was implemented to deal with food scraps and compostable utensils. However, the results fell below expectations due to poor separation of these waste items and a lack of awareness among both participants and the cleaning company. To make improvements, efforts will be needed to educate people about the importance of proper waste separation and to provide better recycling infrastructure (Sziget, 2022).

#### Bins at Sziget (2022)

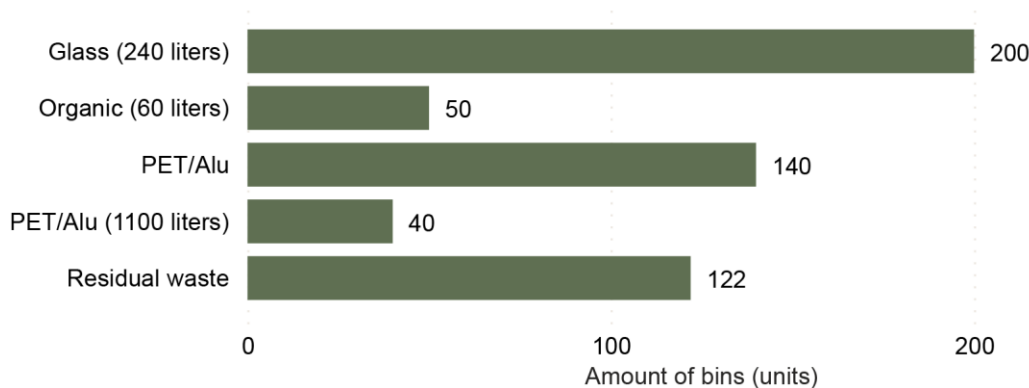


Figure 4.21 Bins at Sziget (2022) (Sziget, 2022).

There are challenges regarding the waste left by campers, and even though most of people take their belongings back, the proportion of the audience that leaves their equipment and waste behind is still concerning (see Figure 4.22). Sziget aims to encourage a more responsible attitude towards camping and make tent donations, but there are still opportunities to improve communication and promote environmental responsibility among campers (Sziget, 2022).

#### What does the audience do with their camping gear?

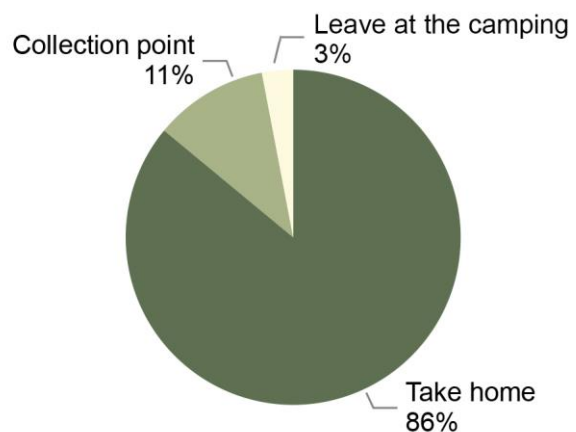


Figure 4.22 What does the audience do with their camping gear? – Sziget 2022 (Sziget, 2022).

Hungarian laws promote recycling over waste reduction, and this approach is reflected in the actions of the Sziget festival, which places greater emphasis on recycling. The main destination of the waste can be seen in figure 4.23 (Sziget, 2022).

### Waste at Sziget (2022)

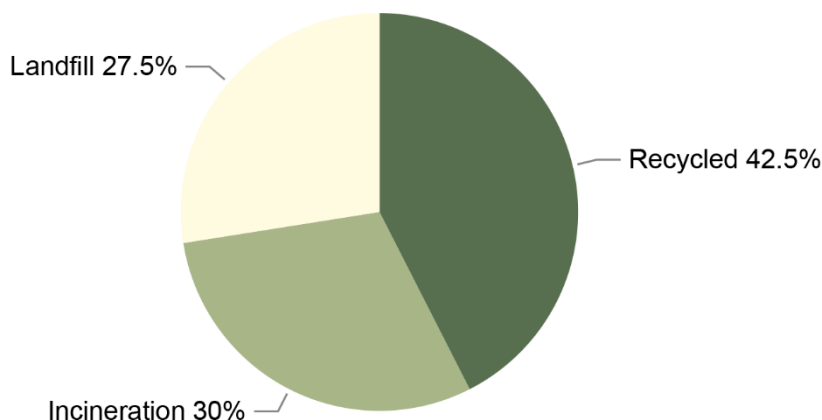


Figure 4.23 Waste at Sziget (2022) (Sziget, 2022).

The management of food at Sziget is an important aspect of their sustainability efforts, with a range of meal options categorized by their environmental impact, as detailed in Table 4.6. Nevertheless, there remains an opportunity to further decrease the prevalence of high-impact meals, as illustrated in Figure 4.24. Educating food suppliers about the significance of sourcing local, seasonal, and organic ingredients can enhance the festival's commitment to sustainability. Moreover, improving the communication surrounding the environmental impacts of meals can empower festival-goers to make more informed and eco-conscious dining choices. By strengthening these aspects of food management, Sziget can continue to make meaningful strides toward its sustainability objectives (Sziget, 2022).

Table 4.6 Classification of meals based on their environmental impact (Sziget, 2022).

| Classification          | Description   |
|-------------------------|---|
| Super high-impact meals | Meals that have beef-herd cow, lamb, mutton as a large component of the dish.   |
| High-impact meals       | Meals that have pork, poultry, or cheese as a large component of the dish.  |
| Medium impact meals     | Meals that have fish, egg, prawns as a large component of the dish.   |
| Low-impact meals        | Meals that have wheat, rye, groundnuts, tomatoes, milk as a large component and almost no animal products.                                    |
| Ultra low-impact meals  | Meals that have vegetables, root vegetables, fruits, soy, peas, corn, cassava as a large component of the dish and almost no animal products. |

**Types of meals sold (estimated) (2022)**

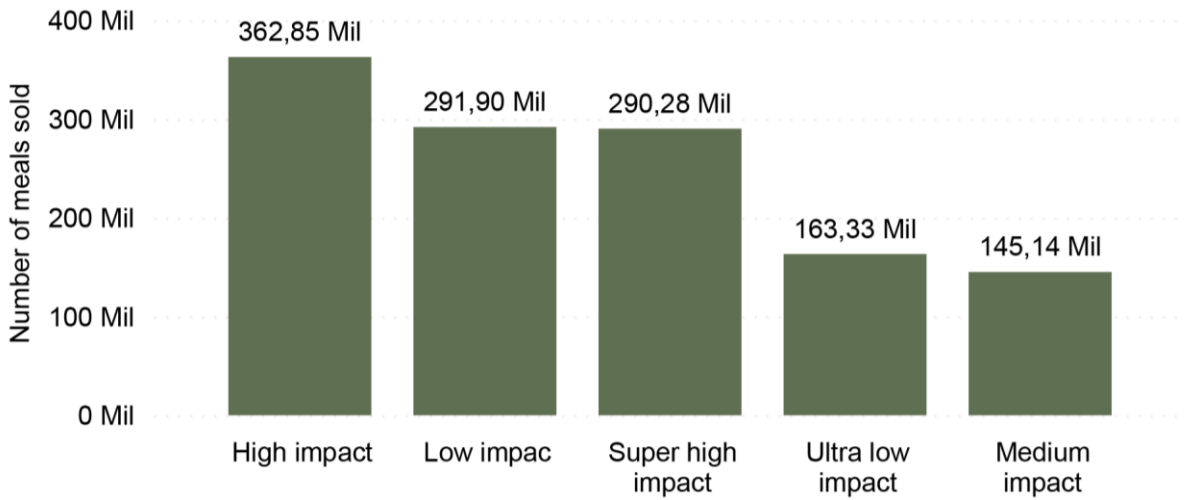


Figure 4.24 Types of meals sold (estimated) – Sziget 2022 (Sziget, 2022).

The festival grapples with plastic consumption, even with the introduction of reusable cups; however, encouraging festival-goers to return these cups poses a persistent challenge. A comprehensive review of this system is imperative to make it more enticing and seamless. While Sziget demonstrates a commitment to enhancing its sustainability, it is evident that there are multiple facets that warrant focused attention to realize more ambitious objectives regarding responsible consumption and production. These areas encompass the implementation of improved waste management practices, widespread public education on sustainability, the establishment of incentives for waste reduction, and fostering closer collaboration with suppliers. The festival has received a rating of 5/10, reflecting its ongoing efforts and the potential for further growth in its sustainability endeavors (Sziget, 2022).

**SDG 13. Climate Action**

Travel represents a significant factor in the festival's carbon emissions, and even though the event tries to organize dedicated public transportation from some cities, only 13% of participants use it. Artist travel (Figure 4.25) also has a significant impact, and while some attempts at more sustainable choices are made, such as artists who are already touring in Europe, there is still a need to explore other alternatives. The major barriers to sustainable travel for the audience can be seen in Figure 4.26 (Sziget, 2022).

**Artist & crew travel (2022)**

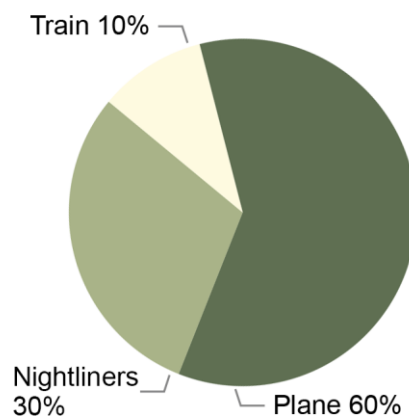


Figure 4.25 Artists & crew travel – Sziget 2022 (Sziget, 2022).

**Obstacles sustainable travel (audience) (2022)**

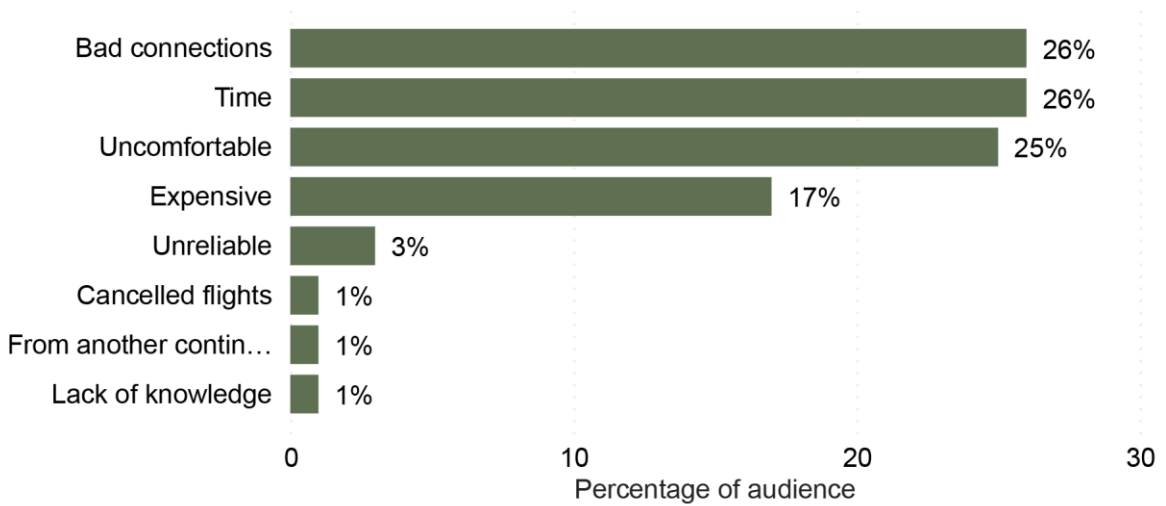


Figure 4.26 Obstacles sustainable travel (audience) – Sziget 2022 (Sziget, 2022).

Carbon offsetting was initiated with the "Sziget Forest" project, where participants can purchase an additional ticket to offset their flight emissions; however, only 122 tickets were sold. According to the Figure 4.27, most of the audience believes that these green initiatives make the event more appealing, furthermore, the communication of sustainable initiatives needs improvement so that a greater number of participants have access to them (Sziget, 2022).

Recommendations include promoting and communicating the projects through international media, establishing short-term and long-term goals, calculating the carbon footprint and sharing the data publicly, promoting the use of public transportation and carpooling, encouraging artists to adopt more sustainable travel options, and creating a dedicated space for environmental education and awareness. Rating given 6/10 (Sziget, 2022).

**Green initiatives make Sziget more appealing? (2022)**

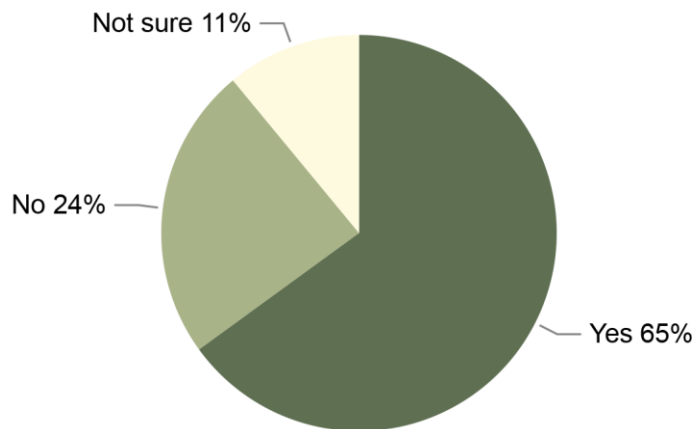


Figure 4.27 Green initiatives make Sziget more appealing? –Sziget 2022 (Sziget, 2022).

## SDG 17. Partnerships for the goals

Sziget has been seeking partnerships with organizations dedicated to promoting sustainability, such as the Green Deal Circular Festival and Greener Festival, which demonstrates a commitment to working with experts and sharing best practices. To make improvements, the festival can invest in measures that promote the circular economy, collaborate with environmentally responsible suppliers, provide information on relevant topics for the audience, such as human rights and environmental protection, create a community space for workshops, discussions, and film screenings to further expand audience engagement, share more data about its own initiatives, establish clear goals, and educate all stakeholders. Rating given 8/10 (Sziget, 2022).

### 4.4.3 Leeds Festival (United Kingdom)

From 2012 to 2021, the Leeds Festival participated in the Creative Green Certification, which involves an external assessment by Julie's Bicycle. In 2019, it achieved a five-star rating, with a total of 82 points out of a maximum of 100 possible points. In the "Commitment to the environment" category (39 out of 40 points), the event demonstrated actions related to policy, action plan, procurement policy, communication and engagement with key stakeholders, staff roles and responsibilities, creative programming, and integration with core organizational development. The event also showed commitment in the "Understanding of the environmental impacts" category (25 out of 25 points), covering energy, emissions, water, waste, travel, and people. In the "Improvement towards reducing environmental impacts" category (18 out of 35 points), the possibilities of reducing or increasing consequences compared to the previous year and the data collection baseline year were evaluated, integrating energy, emissions, water, and waste (Leeds, 2019).

Figure 4.28 illustrates the event's carbon footprint in 2019. The Leeds Festival demonstrated a decrease in energy and emissions-related impacts, while there was an increase in water and waste-related effects compared to previous and baseline years (Figure 4.29). Compared to the baseline year, there was a reduction in energy, emissions, and waste, and an increase in water. The festival's profile indicates that in 2019, the total audience was 89,999 people (Leeds, 2019).

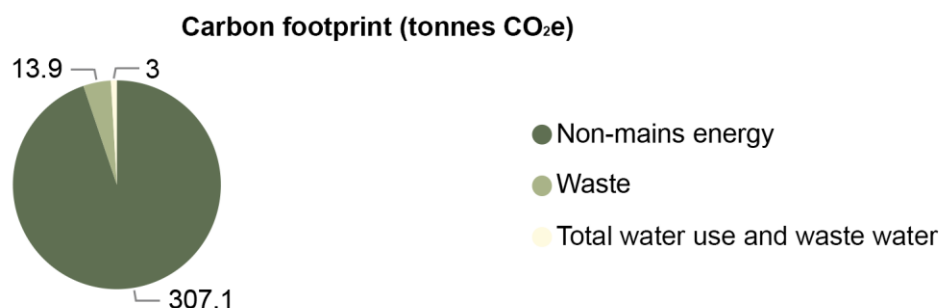


Figure 4.28 Carbon footprint (tonnes CO<sub>2</sub>e) – Leeds Festival 2019 (Leeds, 2019).

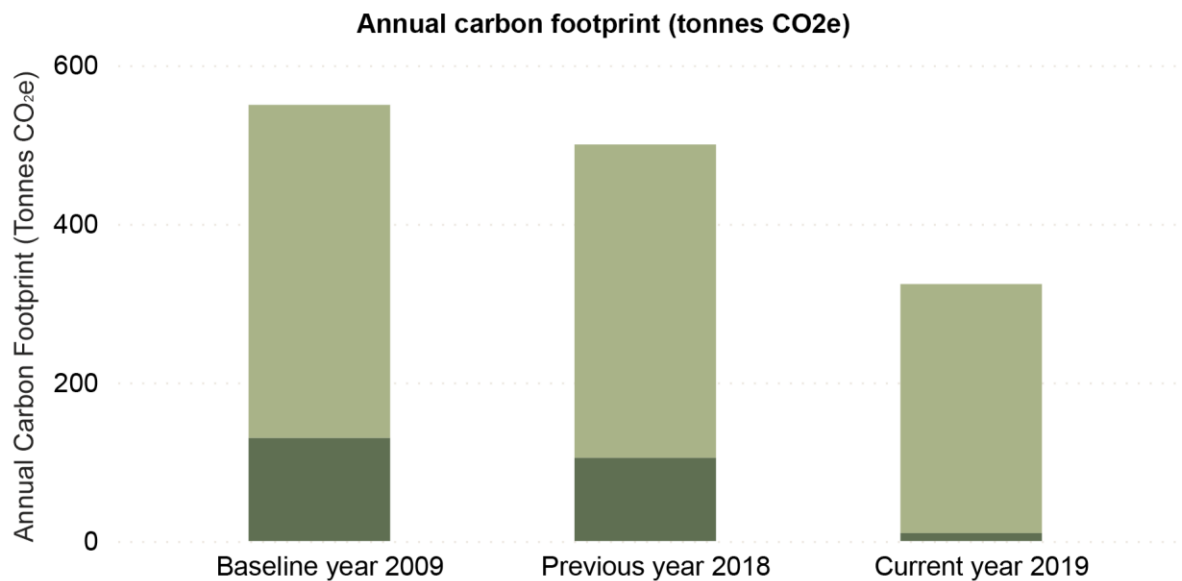


Figure 4.29 Annual carbon footprint (tonnes CO<sub>2</sub>e) – Leeds Festival 2019 (Leeds, 2019).

### Environmental Commitment

Some of the noteworthy actions in organizing the Leeds Festival (Live Nation) involve the dissemination of the Environmental Sustainability Charter with a clear commitment to actions against climate change and significant environmental impacts. The company has an active sustainability team with sustainability leaders, as well as assistants and volunteers present at each festival. Vendors are guided by a Sustainability Policy Statement that sets criteria such as the prohibition of plastics in favor of compostable containers. An effective Sustainability Communication Plan disseminates environmental initiatives through various channels, while similar guidelines are shared with sponsor partners. Additionally, Live Nation collaborates with local organizations and charities to promote green initiatives together (Leeds, 2019).

The scoring feedback in Table 4.7 demonstrates a strong overall commitment to sustainable practices, solid participation, and a comprehensive approach to implementing environmental measures. Maximum ratings were achieved in the categories of policy, strategy, and responsibilities, as well as in communication and engagement (Leeds, 2019).

Table 4.7 Environmental Sustainability Charter – Leeds Festival 2019 (Leeds, 2019).

| Assessment areas                    | Points available | Points awarded |
|-------------------------------------|------------------|----------------|
| Policy, strategy & responsibilities | 12               | 12             |
| Procurement                         | 5                | 4              |
| Communication and engagement        | 23               | 23             |
| Total points                        | 40               | 39             |

The key recommendations for the event to achieve an even higher level of sustainability suggest that Leeds should participate in Season for Change 2021, a national festival of artistic works celebrating the environment and inspiring urgent action on climate change. To continue collaborating with other festivals to raise industry awareness and strengthen Festival Republic's leadership role. To consider the possibility of creating positive incentives to encourage vendors to make improvements, beyond the existing site audits, such as environmental recognition/awards for these suppliers. To continue exploring opportunities to make food and beverage options even more sustainable, including using local suppliers for production, among other initiatives. To explore more creative ways to engage the audience through regenerative programming, such as inviting the audience to make commitments, organizing clean-up events, tree planting, and more (Leeds, 2019).

### **Environmental understanding**

Among the highlighted actions for environmental understanding, meetings with the Event Management team stand out, organized by the sustainability coordinator, with the aim of discussing results and goals, including the Creative Green Report. Energy, water, and diesel consumption are monitored during the festival with data geared towards these annual goals, for waste reduction and audience transportation. In addition, measures are incorporated into supplier evaluation forms and in face-to-face meetings with partners (Leeds, 2019).

Table 4.8 reveals an effective alignment between established goals and achieved results, with maximum scores obtained in all categories (Leeds, 2019). This requires extensive impact monitoring and the effective use of data to define goals and performance indicators in policies and action plans. It is essential that these elements are continuously assessed and that there is a long-term commitment.

Table 4.8 Environmental understanding scoreboard – Leeds Festival 2019 (Leeds, 2019).

| Assessment areas  | Points available | Points scored |
|---|------------------|---------------|
| Submission of energy, water, waste, transport, production                                 | 4                | 4             |
| Attitudinal insights  | 4                | 4             |
| In-depth understanding of energy, water and waste   | 8                | 8             |
| Monitoring of other impact  | 3                | 3             |
| Use of data for setting targets and Key Performance Indicators in policy and action plans | 4                | 4             |
| Evaluation of learning outcomes   | 2                | 2             |
| Total points  | 25               | 25            |

The key recommendations from the report highlight the importance of shifting to an approach that values conducting detailed annual surveys with the public, artists, volunteers, and staff, as well as the sustainability team, to gather feedback on new initiatives and campaigns. It is also important to install water meters in various areas of the festival to enable comparative analyses in specific sectors.

Additionally, increasing understanding of waste areas/categories and their recycling rates to create a detailed Waste Management Plan, targeting specific waste areas such as food sectors, bars, construction, scenography, and camping areas (Leeds, 2019).

### Environmental improvement

Table 4.9 references absolute consumption during the event and allows for visualizing positive progress, such as reductions in energy consumption. However, the results also indicate opportunities for improvement, primarily concerning water demand, as well as waste management and transportation. The points awarded demonstrate a significant commitment to sustainability while also acknowledging potential areas for further development.

Table 4.9 Absolute Environmental Improvement – Leeds Festival 2019 (Leeds, 2019).

| Absolute                     | Current (2019) vs. baseline (2009) | Current (2019) vs. previous (2018) | Points available | Points awarded |
|------------------------------|------------------------------------|------------------------------------|------------------|----------------|
| Energy use                   | -9%                                | -4%                                | 3                | 3              |
| Energy use related emissions | -23%                               | -21%                               | 3                | 3              |
| Water                        | 174%                               | 259%                               | 2                | 0              |
| Waste                        | -6%                                | 14%                                | 2                | 0              |
| Transport                    | No data                            | No data                            | 2                | 1              |
| Total points                 |                                    |                                    | 12               | 7              |

Table 4.10, on the other hand, presents festival data in terms of audience per day metrics. Advances are observed in energy consumption and its related emissions. However, water usage and waste generation increased compared to the previous edition. Regarding transportation, the lack of data makes it difficult to provide a precise analysis and conclusions about the score obtained.

Table 4.10 Relative Environmental Improvement – Leeds Festival 2019 (Leeds, 2019).

| Relative                     | Relative metric  | Current (2019) vs. baseline (2009) | Current (2019) vs. previous (2018) | Points available | Points awarded |
|------------------------------|------------------|------------------------------------|------------------------------------|------------------|----------------|
| Energy use                   | per audience day | -34%                               | -4%                                | 5                | 4              |
| Energy use related emissions | per audience day | -44%                               | -21%                               | 5                | 4              |
| Water                        | per audience day | 98%                                | 259%                               | 4                | 0              |
| Waste                        | per audience day | -32%                               | 14%                                | 4                | 1              |
| Transport                    | per audience day | No data                            | No data                            | 4                | 1              |
| Total points                 |                  |                                    |                                    | 22               | 10             |

This report does not include data on the primary energy consumption and emissions related to the audience's travel to the Leeds Festival. The Creative Green Report makes some recommendations to promote improvements, such as persisting in using environmental impact data to establish meaningful Key Performance Indicators. Carrying out specific on-site energy audits to obtain a customized plan for identifying areas to be improved. Regarding printed materials, exploring the use of recycled paper from sustainable, chlorine-free, and uncoated sources, using water-based or vegetable inks. Conducting environmental workshops in collaboration with vendors to improve performance. Providing greater incentives for the audience to use public transportation, such as discounts on tickets, fast entry to the event, preferential treatment in camping areas, among others. Exploring new ways to engage the audience, artists, and contractors in reducing waste on-site through benefits, discounts, educational workshops, and partnerships with zero-waste eco-friendly products. Continuing to explore partnerships with organizations capable of providing green solutions for existing areas of environmental impact at the festival, such as Comp-a-Tent, Kartent, Crackpacs, City to Sea, among others. Investigating the feasibility of conducting an ecological impact assessment to better understand the species on-site and determine if new measures should be adopted to minimize disturbances to these species. Evaluating the inclusion of local fauna in the sustainability agenda (Leeds, 2019).

### Energy use

Energy consumption (Table 4.11) reveals some significant trends. When we look at the use of non-grid energy sources, it's possible to notice a reduction in consumption compared to previous years and the baseline.

Table 4.11 Energy use – Leeds Festival 2019 (Leeds, 2019).

| Energy use                      | Unit                    | Baseline year (2009) | Previous year (2018) | Current year (2019) | % change current vs. previous | % change current vs. baseline |
|---------------------------------|-------------------------|----------------------|----------------------|---------------------|-------------------------------|-------------------------------|
| Energy use (non-mains) absolute | liters                  | 170,837              | 162,602              | 155,421             | -4%                           | -9%                           |
| Energy use (non-mains) relative | liters per audience day | 0.9                  | 0.6                  | 0.6                 | -4%                           | -34%                          |
| Diesel                          | liters                  | 128,436              | 129,980              | 91,168              | -29%                          | -29%                          |
| Concession diesel               | liters                  | 9,667                | 14,622               | 18,789              | 28%                           | 94%                           |
| Biodiesel                       | liters                  | 4,225                | 18,000               | 38,737              | 115%                          | 816%                          |
| Bottled gas                     | liters                  | 28,509               | 0.0                  | 6,727               | No data                       | -76%                          |

Furthermore, Table 4.11 and Figure 4.30 demonstrate a decrease in diesel consumption and a substantial increase in the use of biodiesel. Bottled gas consumption saw a significant reduction com-

pared to the baseline, although we don't have comparative data for the previous year. The results highlight the importance of diversifying energy sources and adopting more efficient practices to reduce overall consumption and associated emissions.

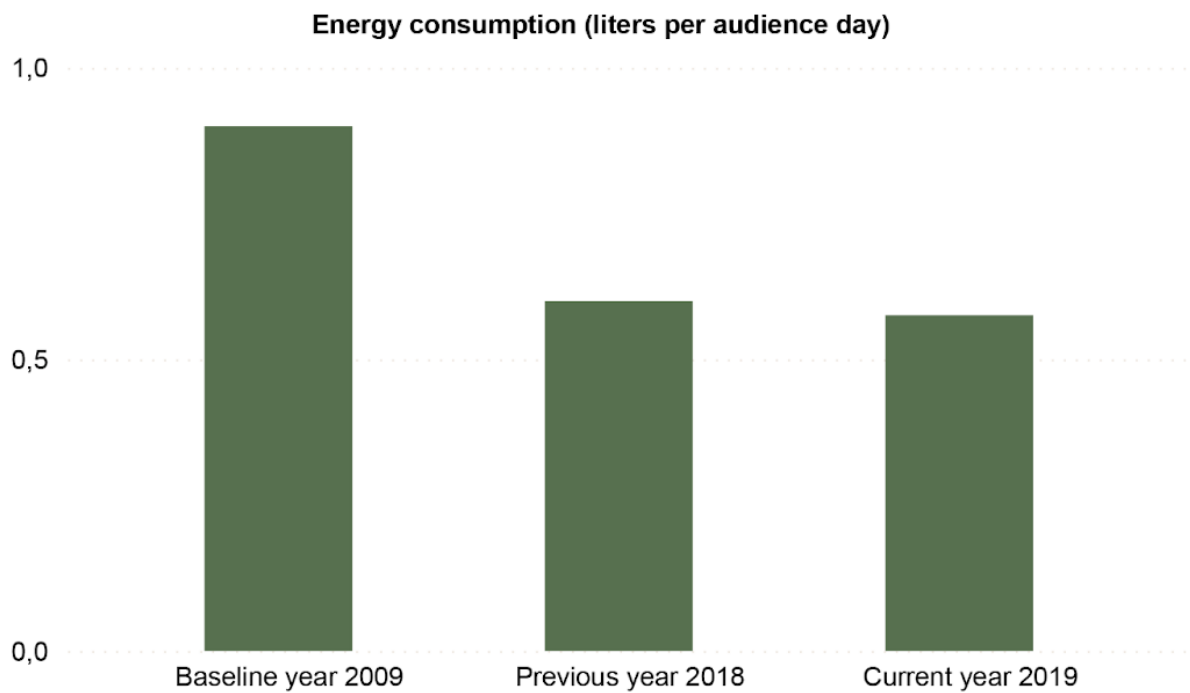
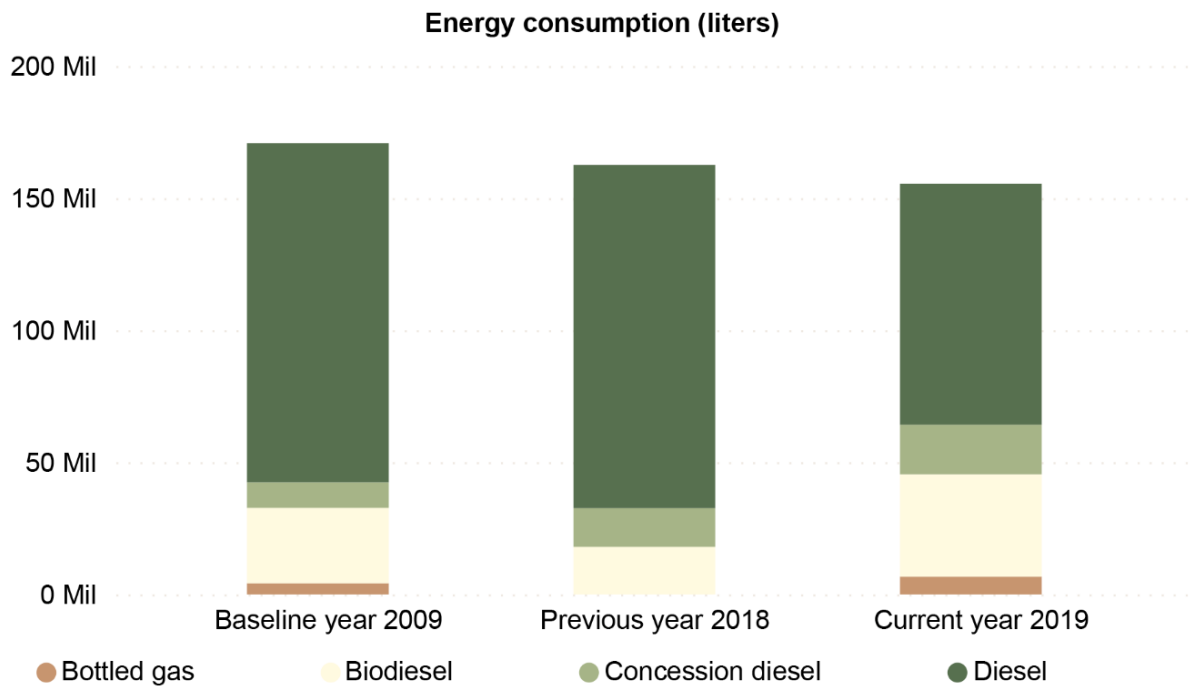


Figure 4.30 Energy consumption (liters and liters per audience day) – Leeds Festival 2019 (Leeds, 2019).

## Energy use related emissions

Table 4.12 shows some trends when evaluating absolute and relative emissions from energy sources. It is evident that there has been a reduction compared to previous years, with this reduction being particularly notable in emissions associated with diesel use.

Table 4.12 Energy use related emissions – Leeds Festival 2019 (Leeds, 2019).

| Energy related emissions          | Unit                                  | Baseline year (2009) | Previous year (2018) | Current year (2019) | % change current vs previous | % change current vs baseline |
|-----------------------------------|---------------------------------------|----------------------|----------------------|---------------------|------------------------------|------------------------------|
| Energy use (all sources) absolute | kg CO <sub>2</sub> e                  | 402,301              | 389,283              | 307,077             | -21%                         | -23%                         |
| Energy use (all sources) relative | kg CO <sub>2</sub> e per audience day | 2                    | 1                    | 1                   | -21%                         | -44%                         |
| Diesel                            | kg CO <sub>2</sub> e                  | 334,242              | 349,359              | 244,966             | -29%                         | -26%                         |
| Concession diesel                 | kg CO <sub>2</sub> e                  | 25,157               | 39,301               | 50,485              | 28%                          | 100%                         |
| Biodiesel                         | kg CO <sub>2</sub> e                  | 74                   | 623                  | 1,384               | 122%                         | 1771%                        |
| Bottled gas                       | kg CO <sub>2</sub> e                  | 42,828               | 0.0                  | 10,243              | No data                      | -76%                         |

On the other hand, through Table 4.12 and Figures 4.31 and 4.32, increases in biodiesel emissions are observed, indicating the need for a more in-depth analysis of alternative energy use practices. Bottled gas consumption has also decreased considerably. These results underline the positive impact of emission reduction strategies and the ongoing importance of directing efforts towards improving energy efficiency.

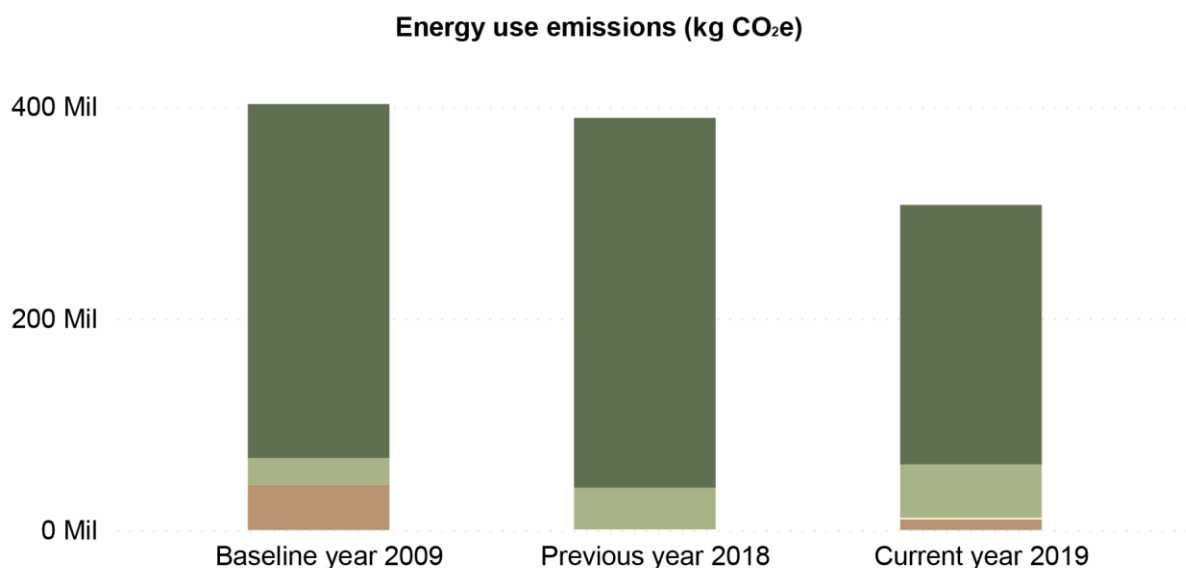


Figure 4.31 Energy use emissions (kg CO<sub>2</sub>e) – Leeds Festival 2019 (Leeds, 2019).

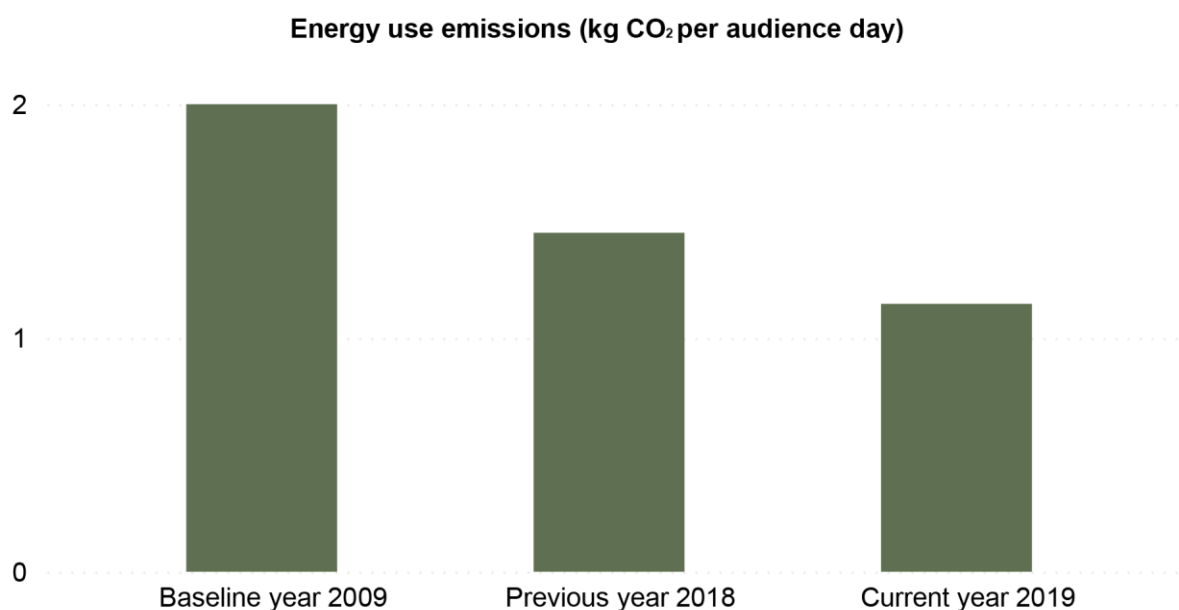


Figure 4.32 Energy use emissions (kg CO<sub>2</sub> per audience day) – Leeds 2019 (Leeds, 2019).

### Water use

The data underscores a notable surge in event consumption, particularly in absolute and relative terms, with the most pronounced increases being associated with water demand and wastewater production. This trend is discernible when comparing current figures to those of previous years as well as to the established baseline, as indicated in Table 4.13 and depicted graphically in Figure 4.33. The considerable uptick in water requirements highlights the need for a more comprehensive understanding of resource management, particularly given the festival's growing scale and complexity. Addressing this escalating demand for water and effectively managing wastewater is imperative for the festival's continued commitment to sustainability and minimizing its environmental footprint. This data prompts a closer examination of water-related practices and the implementation of more efficient strategies to ensure responsible water use in future editions.

Table 4.13 Water use – Leeds Festival 2019 (Leeds, 2019).

| Water use                          | Unit                    | Baseline year (2009) | Previous year (2018) | Current year (2019) | % change current vs. previous | % change current vs. baseline |
|------------------------------------|-------------------------|----------------------|----------------------|---------------------|-------------------------------|-------------------------------|
| Total water use and waste water    | m <sup>3</sup>          | 1,895                | 1,450                | 5,211               | 259%                          | 174%                          |
| Relative water use and waste water | liters per audience day | 10                   | 5                    | 19                  | 259%                          | 98%                           |
| Water use                          | m <sup>3</sup>          | 1,895                | 1,450                | 5,211               | 259%                          | 174%                          |
| Waste water                        | m <sup>3</sup>          | 1,895                | 1,582                | 1,783               | 12%                           | -5%                           |

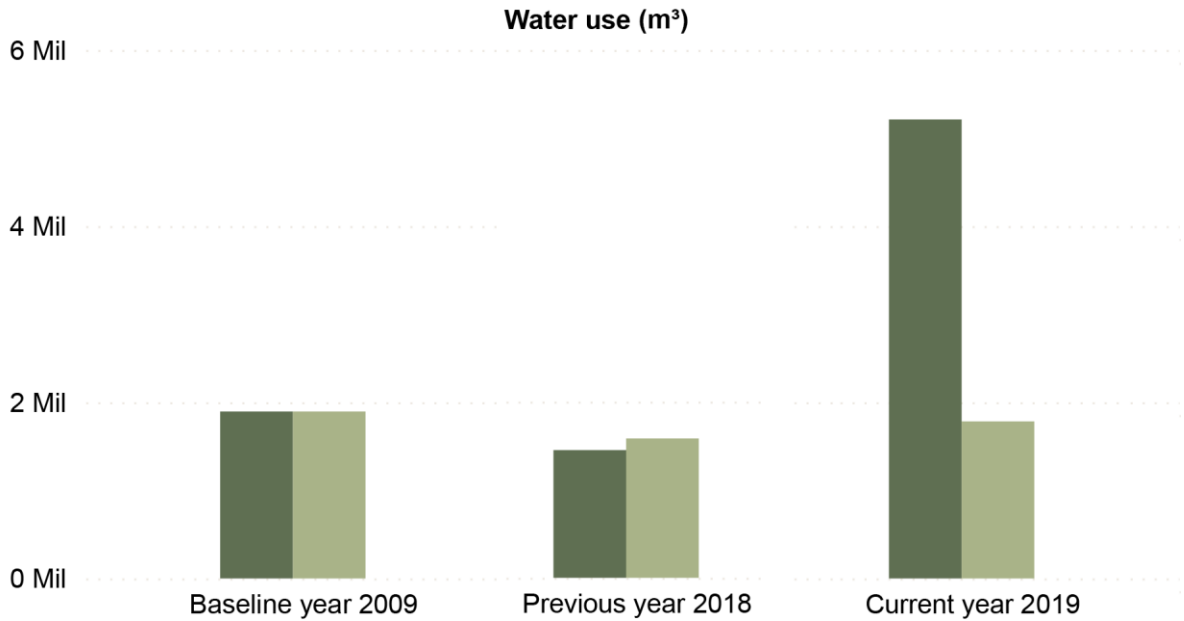


Figure 4.33 Water use (m³) – Leeds (2019) (Leeds, 2019).

The relative consumption per day per audience (Figure 4.34) also showed a significant increase, although there was an increase in water consumption and wastewater generation, the changes in wastewater quantity were more subtle. These results highlight the importance of implementing water conservation and waste management measures to minimize the environmental impacts from the use and disposal of water resources.

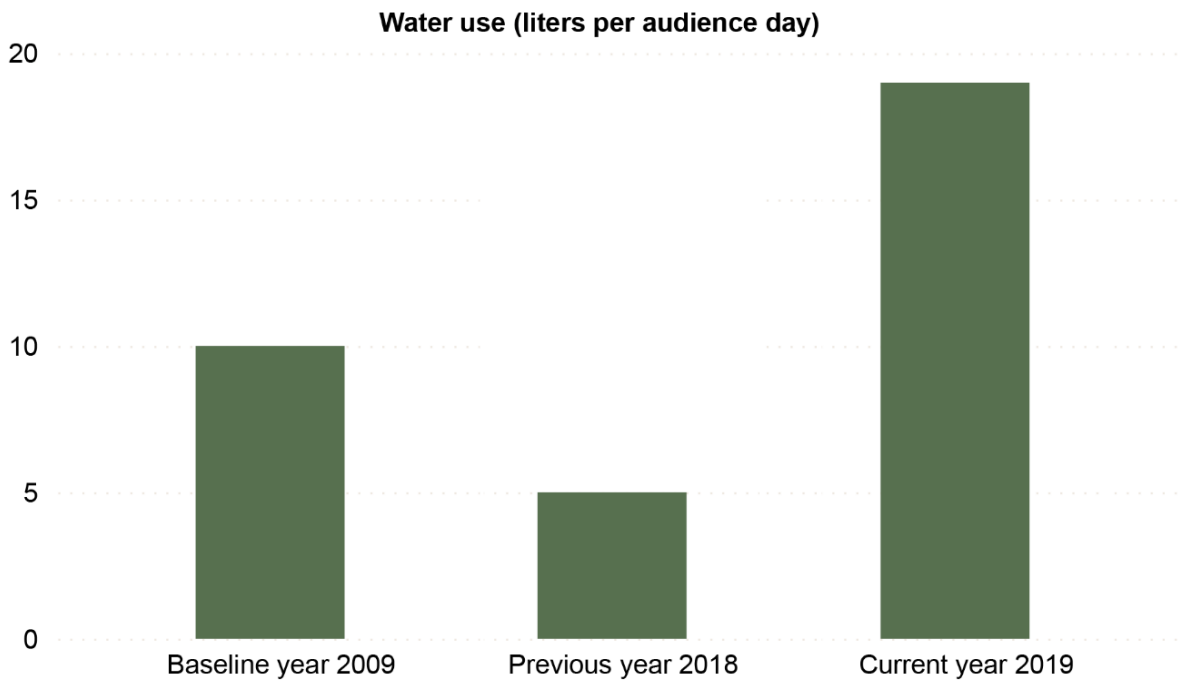


Figure 4.34 Water use (liters per audience day) – Leeds Festival 2019 (Leeds, 2019).

## Waste generation

Table 4.14 reveals a decline in absolute waste generation in comparison to the base year, although there is a slight uptick when compared to the previous year. Similarly, when examining the pattern of waste generation per day of attendance, there is an increase relative to the prior year, yet a significant reduction is observed when compared to the base year (Figures 4.35 and 4.36). These fluctuations underscore the dynamic nature of waste management at the festival and the complex interplay of factors influencing waste production, including audience size, consumption patterns, and evolving sustainability initiatives. These insights signal the need for continued vigilance in waste reduction and optimization strategies to maintain the festival's progress in responsible waste management.

Table 4.14 Waste generation – Leeds Festival 2019 (Leeds, 2019).

| Waste                       | Unit                | Baseline year (2009) | Previous year (2018) | Current year (2019) | % change current vs. previous | % change current vs. baseline |
|-----------------------------|---------------------|----------------------|----------------------|---------------------|-------------------------------|-------------------------------|
| Waste generation (absolute) | tonnes              | 703                  | 573                  | 654                 | 14%                           | -6%                           |
| Waste generation (relative) | kg per audience day | 4                    | 2                    | 2                   | 14%                           | -32%                          |
| Landfill waste              | tonnes              | 464                  | 175                  | 0.0                 | No data                       | No data                       |
| Energy from waste           | tonnes              | 0.0                  | 205                  | 343                 | 67%                           | No data                       |
| Recycling                   | tonnes              | 239                  | 185                  | 303                 | 64%                           | 26%                           |
| Composting                  | tonnes              | 0.0                  | 7                    | 8                   | 7%                            | No data                       |

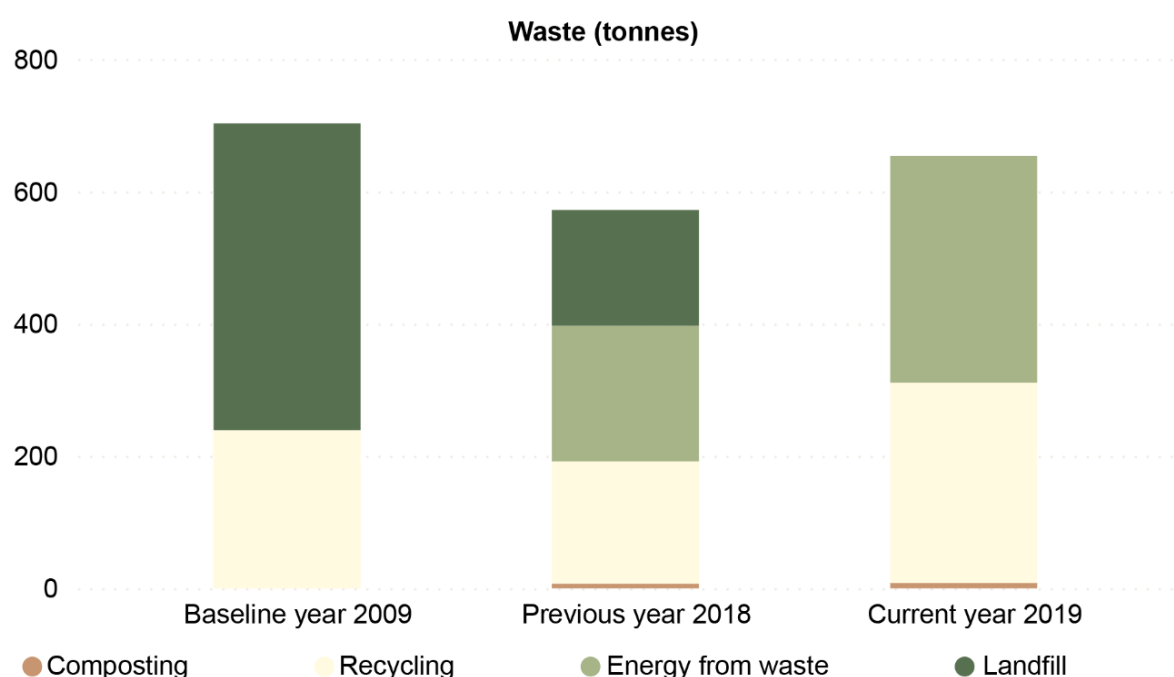


Figure 4.35 Waste (tonnes) – Leeds Festival 2019 (Leeds, 2019).

There have also been some changes in waste categories, such as a reduction in landfill waste and an increase in recycling and composting, which demonstrate advancements in the management of these materials. Opportunities to improve efficiency and waste treatment practices are particularly found in the conversion of energy from waste.

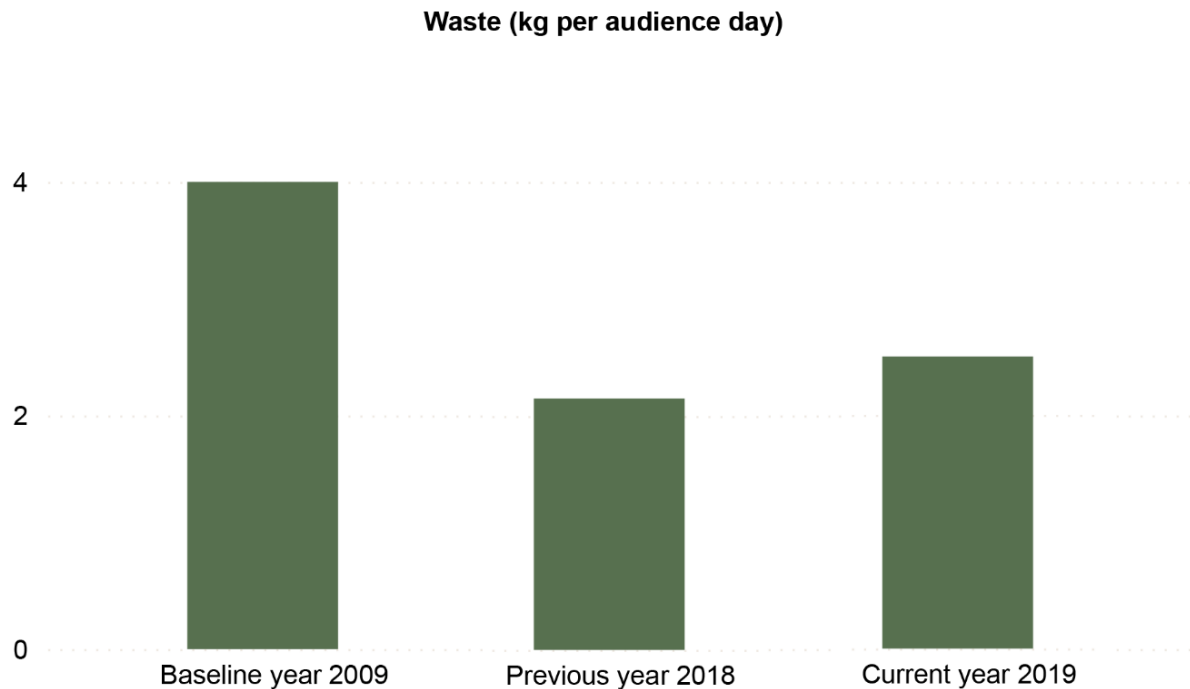


Figure 4.36 Waste (kg per audience day) – Leeds Festival 2019 (Leeds, 2019).

#### 4.4.4 Download Festival (England)

Despite not being among the top 35 music festivals defined in subchapter 4.2, the Download Festival was selected as a case study. According to Annex D, its position is 73rd. However, the event provides data that allows for a comparison across all the years it has been certified, which is relevant from the standpoint of this research.

Established in 2003, the Download Festival occurs annually at Donington Park in Leicestershire, England. It attracts a wide range of famous rock and metal bands and artists. The festival typically includes camping areas, merchandise stalls, food areas, tents dedicated to specific sub-genres, and interactive activities for participants. The event adopts various initiatives to minimize environmental impacts, such as encouraging the audience to take their tents home after use, extensive efforts to eliminate single-use plastics, promoting the use of reusable bottles, and operating a three-category waste sorting system. The Download Festival has ambitious goals to reduce greenhouse gas emissions by 2025. It aims to provide quality music to spectators and be an example of environmental responsibility (Download Festival, 2023).

Between 2016 and 2019, the Download Festival participated in the Creative Green Certification, administered by Julie's Bicycle. In 2019, the event was assessed and achieved a four-star rating, demonstrating efforts applied to different aspects of the Creative Green Report, earning 67 out of 100 points. In the "Commitment to the environment" category (39 out of 40 points), the event demonstrated actions related to policy, action plan, procurement policy, communication and engagement with key stakeholders, staff roles and responsibilities, creative programming, and integration with core organizational development. In the "Understanding of the environmental impacts" category (25 out of 25 points), which encompasses issues related to energy, emissions, water, waste, travel, and people, a high level of commitment was also demonstrated. As for the "Improvement towards reducing environmental impacts" theme (3 out of 35 points), the possibilities of reducing or increasing consequences about the previous year and the data collection baseline were evaluated, considering energy, emissions, water, and waste. In 2019, the Download Festival showed significant increases in all these categories compared to the previous year and the data collection baseline (Figure 4.37). The audience for the year under review was 70,000 people (Download Festival, 2019).

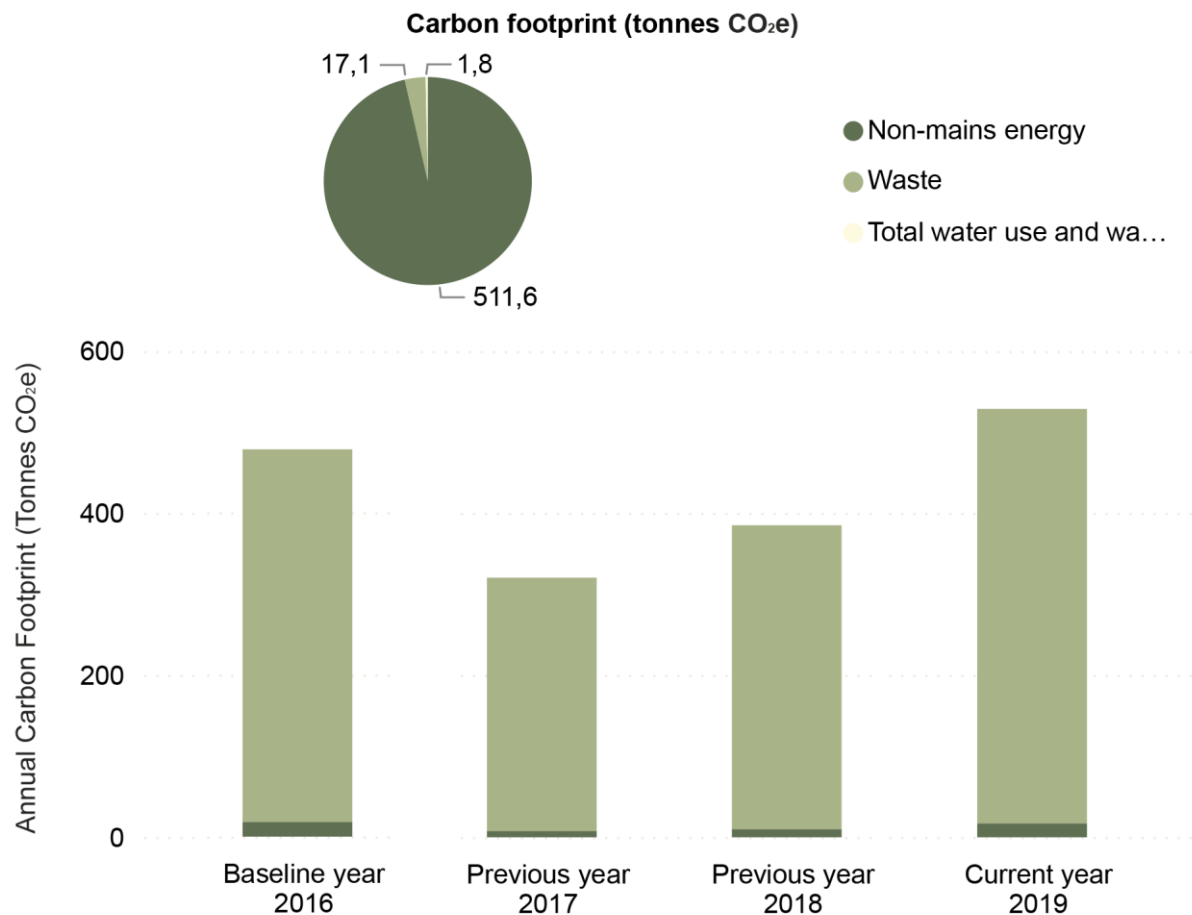


Figure 4.37 Carbon footprint (tonnes CO<sub>2</sub>e) – Download Festival 2019 (adapted from Download Festival, 2017; Download Festival, 2019).

Although certification was discontinued, the festival states that its commitment to sustainability persists, and annual measurements of carbon emissions, data collection, and analysis continue to be

carried out. In 2022, the festival switched to using green diesel, derived from hydrotreated vegetable oil, resulting in a significant reduction (around 90%) in greenhouse gas emissions (Download Festival, 2023).

### **Environmental Commitment**

The Download Festival is managed by Live Nation, which demonstrates its commitment to sustainability through the Environment Sustainability Charter (Table 4.15), publicly disclosed to enhance transparency in management and emphasize actions against climate change and environmental impacts. The company maintains an active sustainability team, including a leader, coordinator, assistants, supervisors, and volunteers. The Sustainability Policy provides guidance to partner vendors to adopt practices such as the exclusive use of compostable containers. The Sustainability Communication Plan introduces environmental initiatives to employees, volunteers, artists, and audiences through various communication channels. Furthermore, Live Nation collaborates with various green entities and local organizations, reinforcing its dedication to sustainable initiatives (Download Festival, 2019).

The examination of available and granted points in the categories of Policy, Strategy & Responsibilities, Procurement, and Communication and Engagement reflects a high degree of commitment and a comprehensive approach to implementing sustainable practices and effective engagement with all stakeholders.

Table 4.15 Environmental Sustainability Charter – Download Festival 2019 (Download Festival, 2019).

| Assessment areas                    | Points available | Points awarded |
|-------------------------------------|------------------|----------------|
| Policy, strategy & responsibilities | 12               | 12             |
| Procurement                         | 5                | 4              |
| Communication and engagement        | 23               | 23             |
| Total points                        | 40               | 39             |

The Creative Green Report suggested implementing some improvements, such as the event's participation in the national festival Season for Change 2021 to promote greater environmental awareness, collaboration with other festivals, engaging the audience through regenerative initiatives, promoting commitments like clean-up activities and tree planting, and offering benefits and incentives to vendors with local audits (Download Festival, 2019).

### **Environmental understanding**

Some of the highlighted actions of the Download Festival concerning Environmental Understanding include meetings between the sustainability coordinator and the event management team to discuss Creative Green Report results and goals, incorporating sustainability into feedback forms sent to all suppliers and contractors and requesting their input, conducting in-person meetings with all part-

ners, monitoring energy, diesel, and water consumption through meter readings, collecting environmental data, and using them to set annual targets for energy, waste, water, and public transport (Download Festival, 2019).

The assessment areas in Table 4.16 and their obtained scores reveal a strong adherence to goals and requirements. Awarding all available points in each category underscores a deep understanding of the environmental implications of their actions and a comprehensive commitment to collecting, analyzing, and applying data to guide strategies, assess impacts, and continually improve sustainability practices (Download Festival, 2019).

The report included some suggestions for performance improvement, such as conducting detailed annual surveys with the audience, artists, volunteers, and staff outside the scope of sustainability to gather feedback on initiatives and campaigns, installing water meters at various sources to enable comparative analysis across different areas, expanding understanding and disclosure of waste categories and recycling rates to create a detailed Waste Management Plan to target specific residual areas, such as food, beverages, construction, scenography, camping, among others (Download Festival, 2019).

Table 4.16 Environmental understanding scoreboard – Download Festival 2019 (Download Festival, 2019).

| Assessment areas  | Points available | Points scored |
|---|------------------|---------------|
| Submission of energy, water, waste, transport, production                                 | 4                | 4             |
| Attitudinal insights  | 4                | 4             |
| In-depth understanding of energy, water and waste   | 8                | 8             |
| Monitoring of other impact  | 3                | 3             |
| Use of data for setting targets and Key Performance Indicators in policy and action plans | 4                | 4             |
| Evaluation of learning outcomes   | 2                | 2             |
| Total points  | 25               | 25            |

### Environmental improvement

Table 4.17 addresses the analysis related to environmental improvements through the provided data. It reveals that, although efforts have been made, the allocation of points was extremely limited in relation to the goals and objectives to be achieved. There was measured progress in comparisons between 2019 and 2016 regarding water use and waste generation. However, the analogy between 2019 and 2018 identifies a substantial increase in energy and water demand and an increase in emissions related to energy consumption and waste generation. The single point awarded is related to the transportation category, which has no data available but ensures a commitment to monitoring and reducing business and audience travel. The allocation of only one point out of twelve available suggests

a significant margin for substantial improvements in established environmental goals. It indicates a need for considerable advancement in sustainable practices (Download Festival, 2019).

Table 4.17 Absolute Environmental Improvement – Download Festival 2019 (Download Festival, 2019).

| Absolute                     | Current (2019) vs. baseline (2016) | Current (2019) vs. previous (2018) | Points available | Points awarded |
|------------------------------|------------------------------------|------------------------------------|------------------|----------------|
| Energy use                   | 28%                                | 55%                                | 3                | 0              |
| Energy use related emissions | 8%                                 | 37%                                | 3                | 0              |
| Water                        | -15%                               | 9%                                 | 2                | 0              |
| Waste                        | -13%                               | 56%                                | 2                | 0              |
| Transport                    | No data                            | No data                            | 2                | 1              |
| Total points                 |                                    |                                    | 12               | 1              |

Table 4.18 demonstrates a significant increase in consumption and waste generation, both when comparing the years 2019 and 2016 and when comparing the years 2019 and 2018. Similar to Table 4.17, the only point awarded was in the transportation category, with no data available. The allocation of this single point out of a total of 22 available indicates the need for substantial advancement about established sustainability goals and that there is room for significant improvements in implementing practices that demonstrate environmental responsibility.

Table 4.18 Relative Environmental Improvement – Download Festival 2019 (Download Festival, 2019).

| Relative                     | Relative metric  | Current (2019) vs. baseline (2016) | Current (2019) vs. previous (2018) | Points available | Points awarded |
|------------------------------|------------------|------------------------------------|------------------------------------|------------------|----------------|
| Energy use                   | per audience day | 119%                               | 166%                               | 5                | 0              |
| Energy use related emissions | per audience day | 85%                                | 135%                               | 5                | 0              |
| Water                        | per audience day | 44%                                | 87%                                | 4                | 0              |
| Waste                        | per audience day | 48%                                | 167%                               | 4                | 0              |
| Transport                    | per audience day | No data                            | No data                            | 4                | 1              |
| Total points                 |                  |                                    |                                    | 22               | 1              |

Several recommendations have been listed for the event to make improvements, such as enhancing the automation of the report to include data on primary energy usage and emissions related to public travel, using environmental impact information to define significant key performance indicators, implementing specific on-site energy audits to create a personalized plan identifying areas for improvement. For printed materials, it is suggested to use recycled papers from sustainable sources, chlorine-

free and uncoated, employing water-based or vegetable inks to reduce chemical use. Conducting environmental workshops with vendors to improve their current performance, monitoring their energy use to test a pay-per-use system, engaging them in improving energy efficiency, and encouraging the public to use public transportation through benefits like transportation ticket discounts, fast event access, and preferential camping treatment, among others. Exploring new ways to involve the audience, artists, and contractors to reduce waste on-site, such as incentives, benefits, discounts, educational workshops, partnerships with zero-waste products, etc. Seeking partnerships with organizations that can offer green solutions for existing areas of environmental impact within the festival. Conducting an ecological impact assessment to understand better the species on-site, plan measures to minimize disruptions to these species, and include local wildlife in the sustainability agenda (Download Festival, 2019).

### Energy use

Energy consumption (Table 4.19) reveals some notable fluctuations over the years. Non-main energy showed significant increases in absolute and relative consumption in 2019 compared to previous years. Diesel consumption also increased, though to a lesser extent. Using biodiesel and bottled gas does not provide data of earlier years, making a detailed analysis impossible. These trends highlight some drawbacks in using energy resources that may require further assessments and strategies to optimize energy efficiency in the future.

Table 4.19 Energy use – Download Festival 2019 (adapted from Download Festival, 2017; Download Festival, 2019).

| Energy use                      | Unit                    | 2016    | 2017    | 2018    | 2019    | % change 2019 vs. 2018 | % change 2019 vs. 2016 |
|---------------------------------|-------------------------|---------|---------|---------|---------|------------------------|------------------------|
| Energy use (non-mains) absolute | liters                  | 167,114 | 111,028 | 137,659 | 214,243 | 55%                    | 28%                    |
| Energy use (non-mains) relative | liters per audience day | 0.5     | 0.7     | 0.4     | 1       | 166%                   | 119%                   |
| Diesel                          | liters                  | 137,522 | 115,666 | 123,794 | 154,150 | 24%                    | 12%                    |
| Concession diesel               | liters                  | 29,592  | 1,362   | 13,865  | 23,203  | 67%                    | -21%                   |
| Biodiesel                       | liters                  | 0.0     | 0.0     | 0.0     | 14,200  | No data                | No data                |
| Bottled gas                     | liters                  | 0.0     | 0.0     | 0.0     | 22,690  | No data                | No data                |

Table 4.19 and Figure 4.38 also note that the only resource with reduced demand was diesel fuel in 2019 compared to 2016. Among all the analyzed data, the most significant transition relates to the energy consumption per day of the event audience, which showed an increase of over 100% compared to previous years.

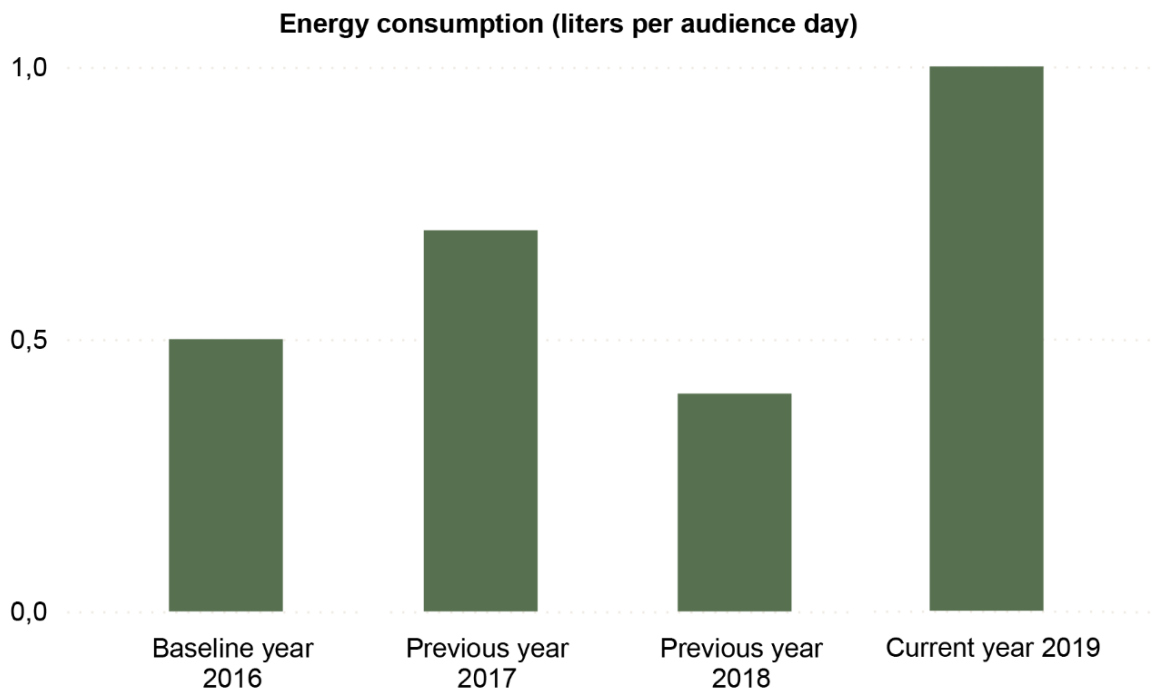
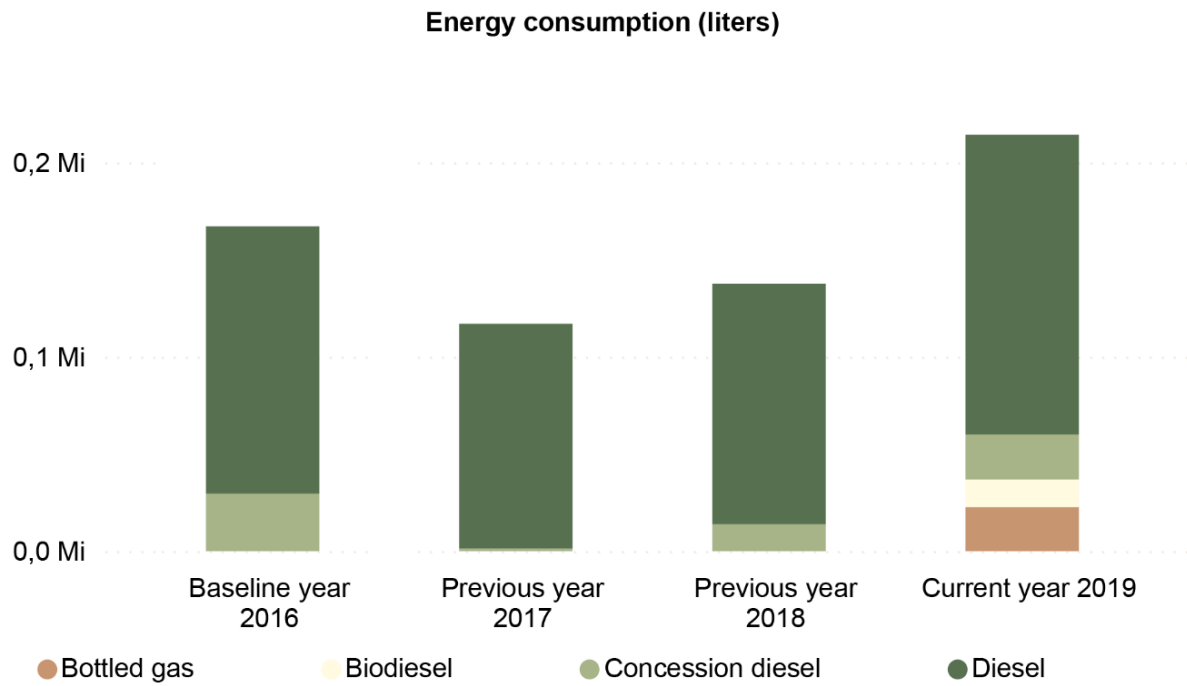


Figure 4.38 Energy consumption (liters and liters per audience day) – Download Festival 2019 (adapted from Download Festival, 2017; Download Festival, 2019).

## Energy use related emissions

Table 4.20 presents the energy consumption data in terms of CO<sub>2</sub> emissions, where the patterns are similar in terms of both absolute and relative consumption.

Table 4.20 Energy use related emissions – Download Festival 2019 (adapted from Download Festival, 2017; Download Festival, 2019).

| Energy related emissions          | Unit                                  | 2016    | 2017    | 2018    | 2019    | % change 2019 vs 2018 | % change 2019 vs 2016 |
|-----------------------------------|---------------------------------------|---------|---------|---------|---------|-----------------------|-----------------------|
| Energy use (all sources) absolute | kg CO <sub>2</sub> e                  | 478,128 | 330,022 | 376,302 | 517,098 | 37%                   | 8%                    |
| Energy use (all sources) relative | kg CO <sub>2</sub> e per audience day | 1       | 2       | 1       | 2       | 135%                  | 85%                   |
| Diesel                            | kg CO <sub>2</sub> e                  | 368,036 | 309,051 | 332,732 | 414,196 | 24%                   | 12%                   |
| Concession diesel                 | kg CO <sub>2</sub> e                  | 79,194  | 3,639   | 37,266  | 62,346  | 67%                   | -21%                  |
| Biodiesel                         | kg CO <sub>2</sub> e                  | 0.0     | 0.0     | 0.0     | 507     | No data               | No data               |
| Bottled gas                       | kg CO <sub>2</sub> e                  | 0.0     | 0.0     | 0.0     | 34,548  | No data               | No data               |

There were increases in non-main energy emissions in 2019 compared to previous years, and these increases are also evident in the relative emissions (Figure 4.40). Diesel consumption and its associated emissions are substantial, while the demand for biodiesel and bottled gas does not have previous data, making a more detailed analysis impossible.

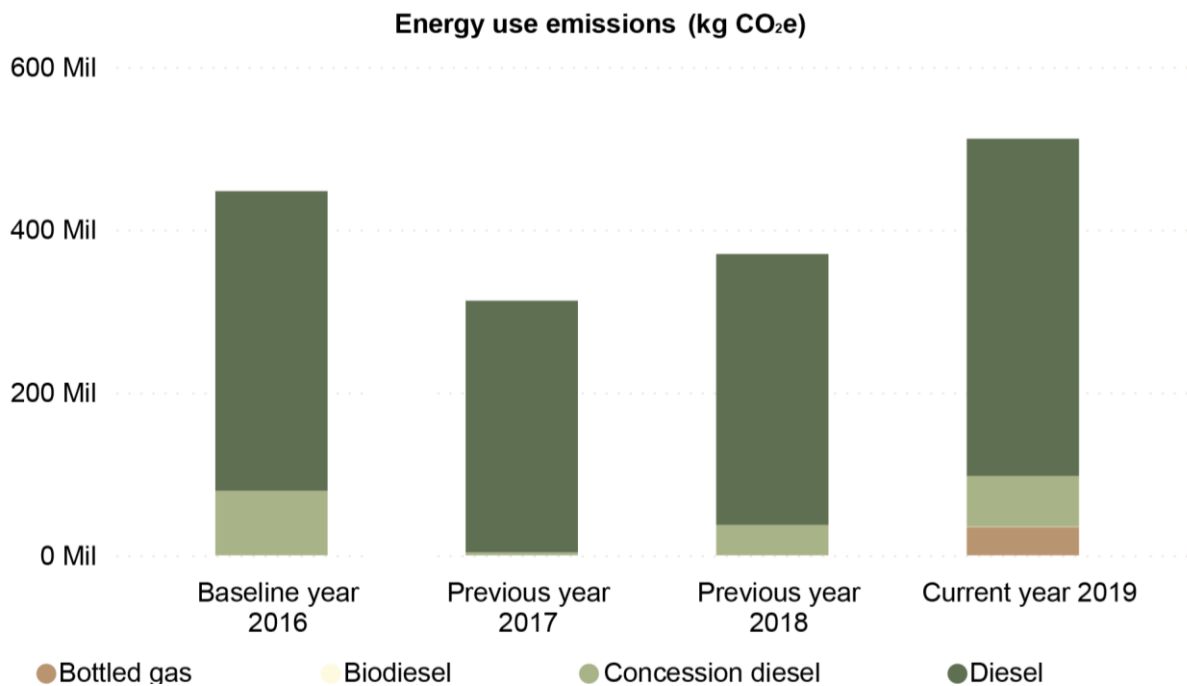


Figure 4.39 Energy use emissions (kg CO<sub>2</sub>e) – Download Festival 2019 (adapted from Download Festival, 2017; Download Festival, 2019).

### Energy use emissions (kg CO<sub>2</sub> per audience day)

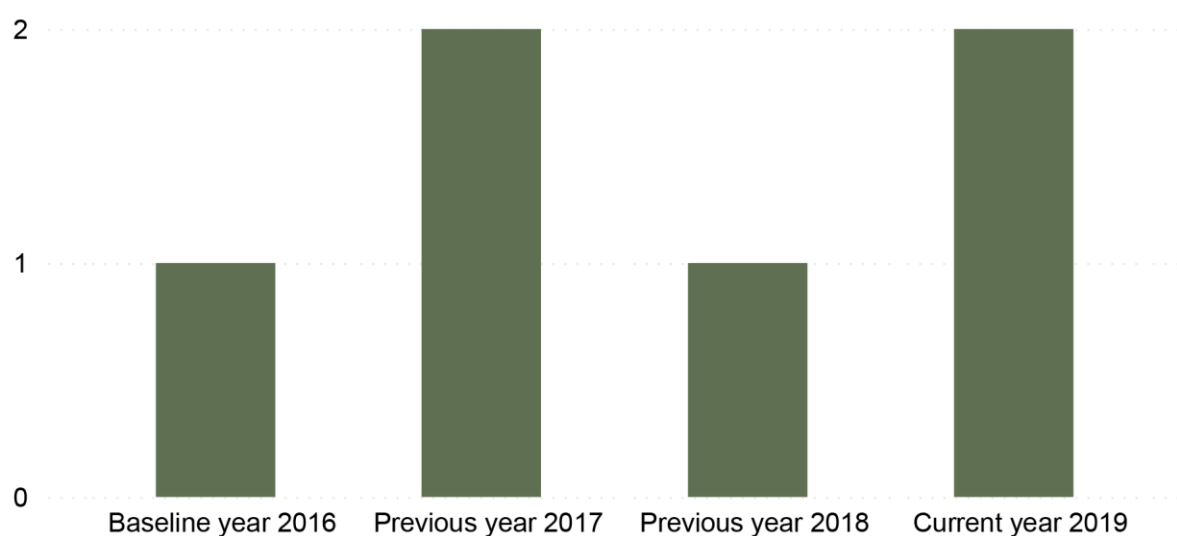


Figure 4.40 Energy use emissions (kg CO<sub>2</sub> per audience day) – Download Festival 2019 (Download Festival, 2017; Download Festival, 2019).

### Water use

The analysis of the data presented in Table 4.21 reveals inconsistencies in the patterns, both in absolute and relative terms. The inconsistency in the data presented in both Table 4.21 and Figure 4.41 makes it challenging to derive definitive conclusions. All indicators show variable fluctuations over the years, demonstrating increases and decreases without a clear trend. This complexity underscores the importance of careful assessment and flexible approaches to understanding the entire lifecycle of water resource consumption and its environmental impacts.

Table 4.21 Water use – Download Festival 2019 (Download Festival, 2017; Download Festival, 2019).

| Water use                          | Unit                    | 2016  | 2017  | 2018  | 2019  | % change 2019 vs. 2018 | % change 2019 vs. 2016 |
|------------------------------------|-------------------------|-------|-------|-------|-------|------------------------|------------------------|
| Total water use and waste water    | m <sup>3</sup>          | 3,536 | 3,040 | 2,732 | 2,990 | 9%                     | -15%                   |
| Relative water use and waste water | liters per audience day | 10    | 17    | 8     | 14    | 87%                    | 44%                    |
| Water use                          | m <sup>3</sup>          | 3,536 | 3,040 | 2,32  | 2,990 | 9%                     | -15%                   |
| Waste water                        | m <sup>3</sup>          | 1,211 | 679   | 1,247 | 1,042 | -16%                   | -13%                   |

The inconsistency in the data presented in both Table 4.21 and Figure 4.41 makes it challenging to derive definitive conclusions. All indicators show variable fluctuations over the years, demonstrating increases and decreases without a clear trend. This complexity underscores the importance of careful assessment and flexible approaches to understanding the entire lifecycle of water resource consumption and its environmental impacts.

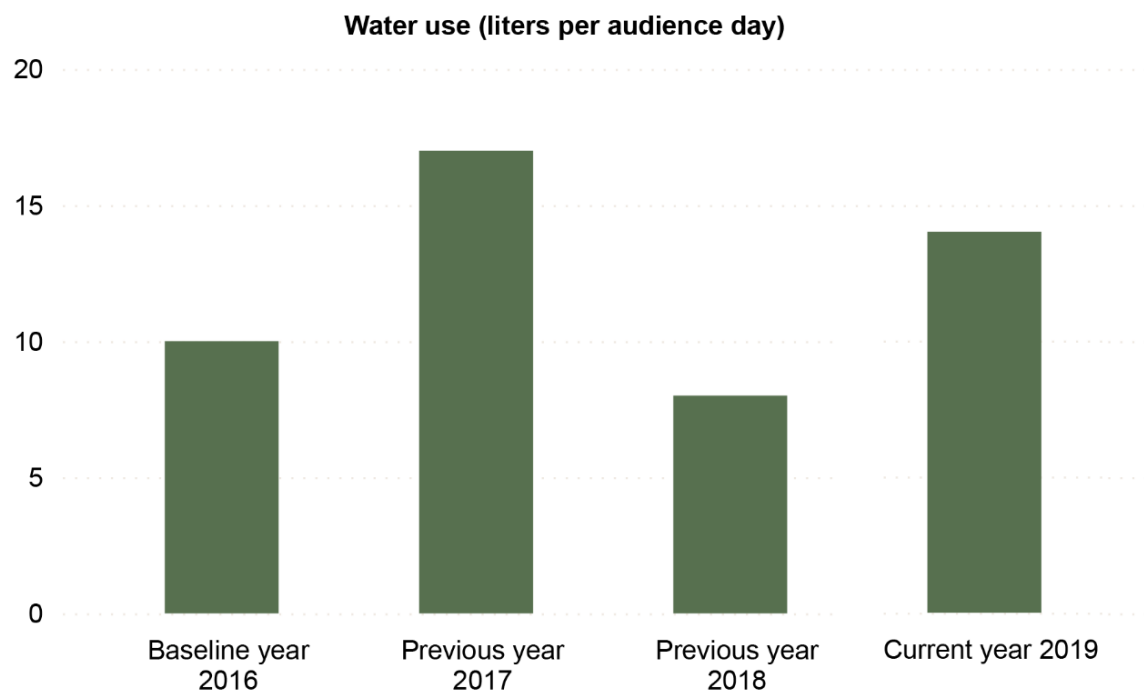
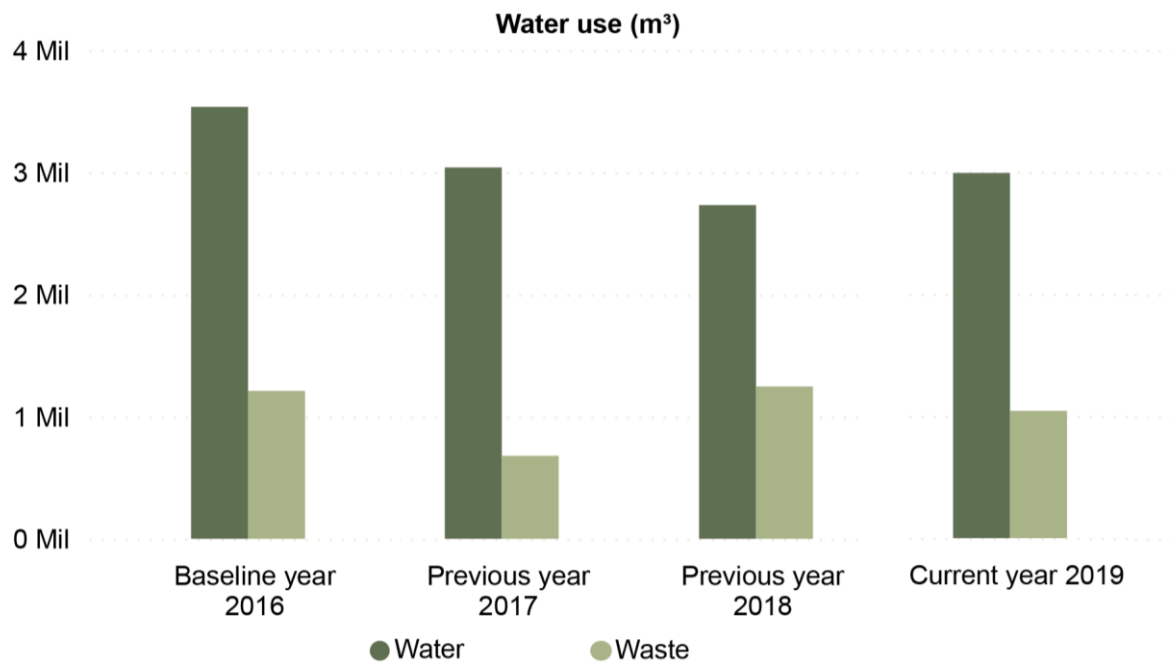


Figure 4.41 Water use (m<sup>3</sup> e liters per audience day) – Download Festival 2019 (adapted from Download Festival, 2017; Download Festival, 2019).

## Waste generation

The data regarding waste generation, as presented in Table 4.22 and illustrated in Figure 4.42, reveals a dynamic pattern with notable fluctuations over the years. Notably, there was a significant reduction in absolute waste generation observed between 2016 and 2017. However, it's important to highlight that subsequent years have witnessed a gradual increase, emphasizing the need for a comprehensive analysis to discern the contributing factors and the evolving dynamics influencing these waste trends. Understanding these variables is pivotal for making informed decisions and devising strategies to effectively manage waste while maintaining the festival's commitment to sustainability.

Table 4.22 Waste generation – Download Festiva 2019 (Download Festival, 2017; Download Festival, 2019).

| Waste                       | Unit                | 2016 | 2017 | 2018 | 2019 | % change 2019 vs. 2018 | % change 2019 vs. 2016 |
|-----------------------------|---------------------|------|------|------|------|------------------------|------------------------|
| Waste generation (absolute) | tonnes              | 927  | 361  | 515  | 804  | 56%                    | -13%                   |
| Waste generation (relative) | kg per audience day | 3    | 2    | 1    | 4    | 167%                   | 48%                    |
| Landfill waste              | tonnes              | 0.0  | 0.0  | 0.0  | 0.0  | No data                | No data                |
| Energy from waste           | tonnes              | 321  | 213  | 278  | 328  | 18%                    | 2%                     |
| Recycling                   | tonnes              | 598  | 145  | 229  | 468  | 104%                   | -21%                   |
| Composting                  | tonnes              | 7    | 2    | 9    | 8    | -8%                    | 11%                    |

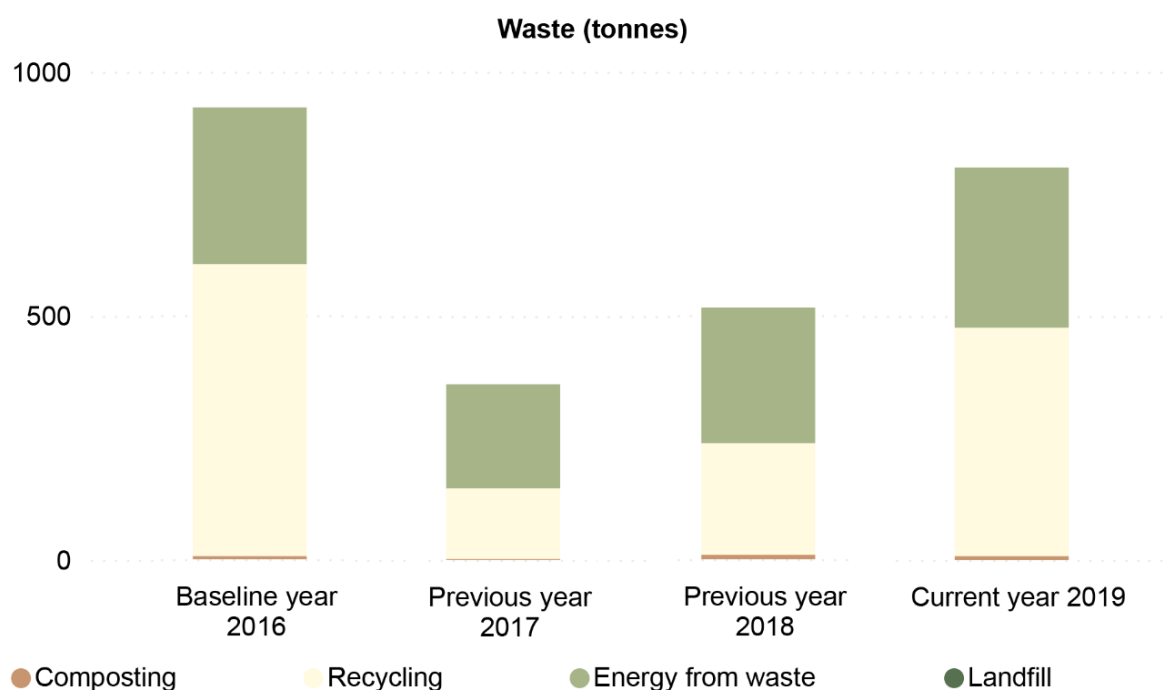


Figure 4.42 Waste (tonnes) – Download Festival 2019 (Download Festival, 2017; Download Festival, 2019).

The analysis of per capita waste generation per event day, as illustrated in Figure 4.43, unveils an intriguing inverse trend when compared to absolute waste production. From 2016 to 2018, there was a noticeable and commendable decline in this metric, signifying concerted efforts to optimize resource utilization and minimize the festival's environmental footprint. This reduction likely stemmed from a combination of factors, such as improved waste management strategies, heightened environmental awareness among attendees, and enhanced sustainability initiatives.

However, the notable spike observed in 2019 in per capita waste generation per event day serves as a pivotal reminder of the dynamic nature of sustainability challenges at large-scale events. This shift may be attributed to various factors, including changes in attendee behavior, shifts in food and beverage offerings, or even a surge in festival attendance. This fluctuation underscores the enduring importance of flexibility and adaptability in festival management practices.

The data signals the ongoing necessity for proactive measures to maintain a sustainable reduction trajectory over time. These measures encompass continuous engagement with attendees to promote responsible consumption and waste reduction, meticulous waste sorting and recycling efforts, and on-going evaluations of the festival's supply chain and waste management processes. Furthermore, it emphasizes the value of data-driven decision-making, enabling festival organizers to identify the specific drivers behind these variations and implement targeted strategies to counteract them. By learning from these patterns and remaining committed to their sustainability goals, festivals can make strides in minimizing their environmental impact while providing memorable experiences for attendees.

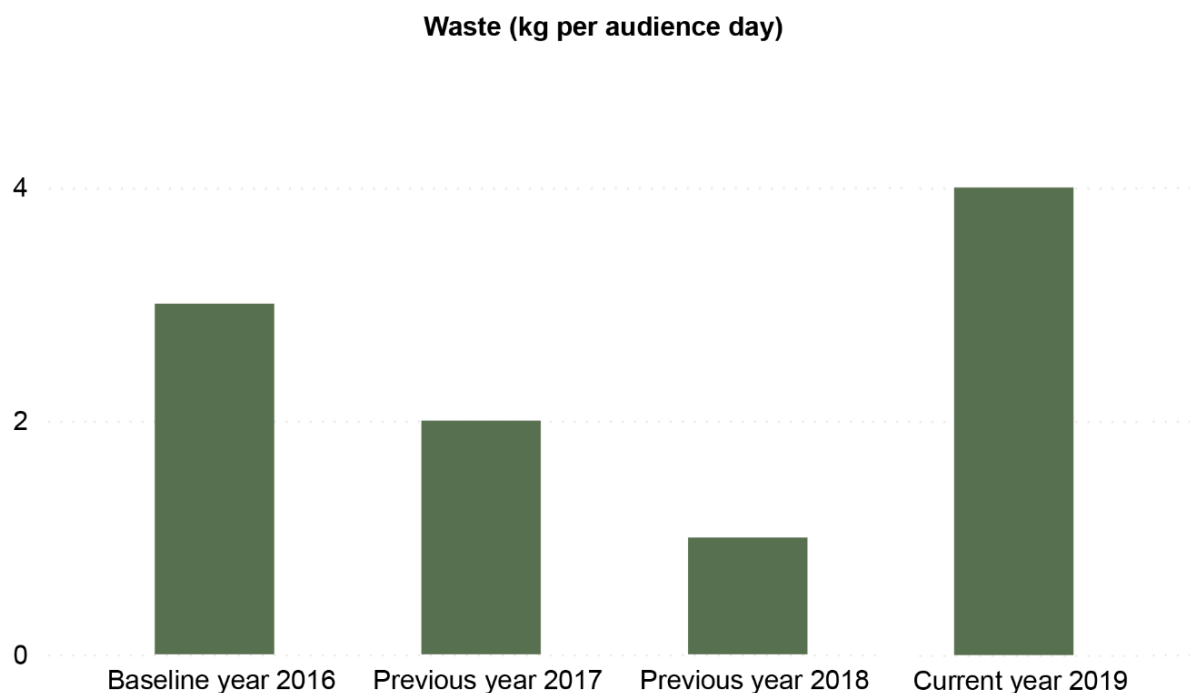


Figure 4.43 Waste (kg per audience day) – Download Festival 2019 (adapted from Download Festival, 2017; Download Festival, 2019).

## 4.5 Audience Survey

To fill the information gap and gain a broader perspective on the consequences generated by music festivals in their surroundings, a public questionnaire was conducted as part of this investigation. Given the complexity of the environmental, social, and economic impacts of these events, direct participation from the public is of utmost importance to capture their opinions, concerns, and expectations. Over sixty days, 209 individuals responded to this questionnaire, providing valuable insights into their perceptions and experiences.

The results are presented through graphs to offer a clear and accessible representation of the collected opinions. This approach allows for a comprehensive analysis of various dimensions of the public's experience, such as their perception of the benefits and inconveniences arising from a music festival and other relevant aspects. By comparing the public's results with festival organizers' perspectives, it will be possible to paint a more complete and balanced picture of these events.

Figure 4.44, showcasing the audience's age range, serves as a tool for comprehending the festival's demographic diversity. It provides insights into the age groups that exhibit the strongest affinity for music festivals, allowing organizers to tailor their offerings and programming to cater effectively to the preferences and interests of these demographics. This data-driven approach not only enhances the overall festival experience but also informs marketing and promotional strategies, ensuring that the event resonates with its target audience and continues to attract a broad spectrum of attendees.

### Age group

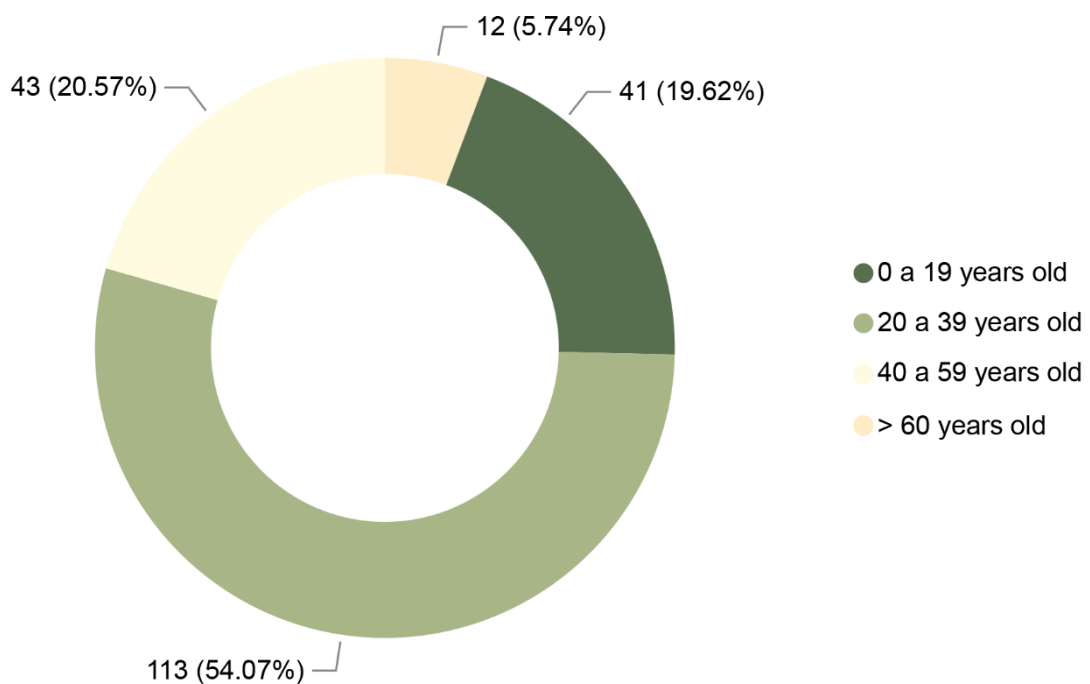


Figure 4.44 Survey results - Age group (author).

The results show that the age group from 20 to 39 years old comprises a significant portion, indicating a predominantly young audience in a phase of high productivity and a desire for cultural expression. The presence of viewers up to nineteen years old reflects the inclusion of younger generations in this scenario, reflecting youthful interest in promoting cultural and artistic experiences. The contingent of 40 to 59 years old highlights the appeal to various generations, as well as the audience above sixty years old, reaffirming an appeal that encompasses and embraces a diverse audience, while also demonstrating the ability of music festivals to bring generations together and provide enriching experiences for a varied audience.

When conducting research, the opportunity to include the perspective of people living in different regions broadens the knowledge landscape, as each location has its own cultural context, traditions, and specificities that influence how festivals are conceived, organized, and experienced. Figure 4.45 represents the geographical distribution of the participants

### Country

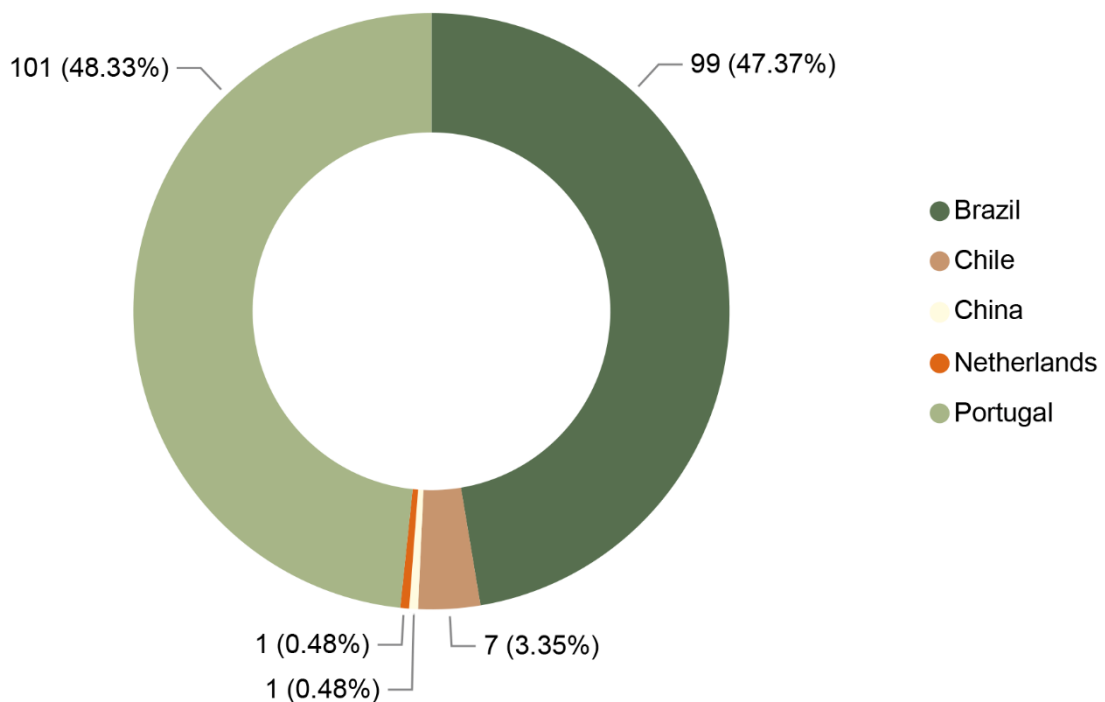


Figure 4.45 Survey results - Country (author).

When constructing a geographical profile, the analysis reveals the primary regions where research outreach achieved notable success in attracting participants. This insight provides valuable information about the geographic areas with the most robust festival engagement and serves as a foundation for refining outreach efforts in regions that may have lower participation rates. By understanding

these geographic patterns, festival organizers can strategically allocate resources and tailor their marketing and outreach strategies to further enhance their global and regional presence.

Figure 4.46 indicates the frequency of the public's participation in music festivals, which is directly related to the growth of this industry. Most research participants claim to attend festivals once a year, suggesting a significant demand for annual events. Many attend two to three times a year, showing appreciation for a diverse market that offers entertainment more frequently. Those who attend more than four times a year can be considered enthusiasts, as frequent participation in a music festival often requires significant travel. The segment of people who do not attend events is also informative, as it represents an audience that does not feel interested in the offerings and benefits provided at a festival in return for the financial cost involved.

### How often do you participate in music festivals?

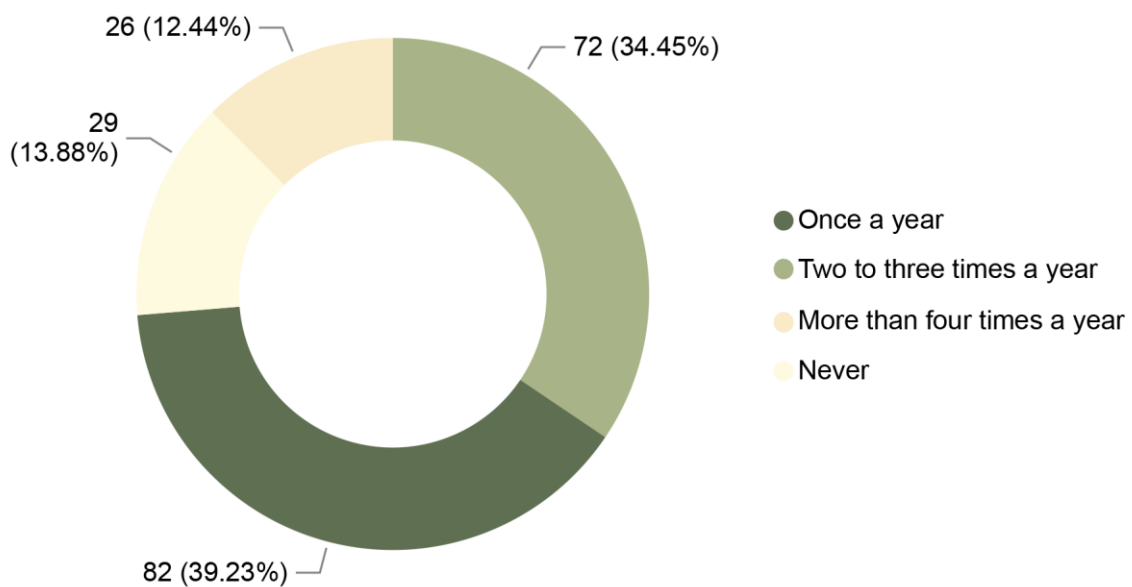


Figure 4.46 How often do you participate in music festivals? (author).

The more frequently people participate in music festivals, the greater the potential for waste generation and greenhouse gas emissions, as increased resource consumption, disposable products, travel, and energy use all contribute to this scenario. However, frequent festival attendance can also positively influence the audience's mindset regarding environmental responsibility. Those who attend events committed to sustainability initiatives may become more aware of the environmental impacts of their actions and be more willing to adopt practices that benefit the planet, potentially fostering a cultural shift in consumption and waste generation both within events and in their daily lives.

Figure 4.47 reflects a clear and overwhelming appreciation for sustainability among the public. The numbers reveal substantial support for promoting a sustainable environment in this context, demonstrating that most of the audience recognizes the importance of ecologically responsible approaches. The portion stating that sustainability is good but not essential suggests that even among the few who do not see it as a top priority, there is still some level of recognition and appreciation for environmental responsibility at music festivals. This indicates that the idea and adoption of sustainable practices at festivals have widely spread and are still seen as beneficial, even if not considered indispensable by a minority. The marginal percentage who stated that sustainability makes no difference suggests that a very small portion of the public is not yet convinced of its benefits or does not consider environmental issues a priority in general.

### Do you think it's important for music festivals to promote a sustainable environment?

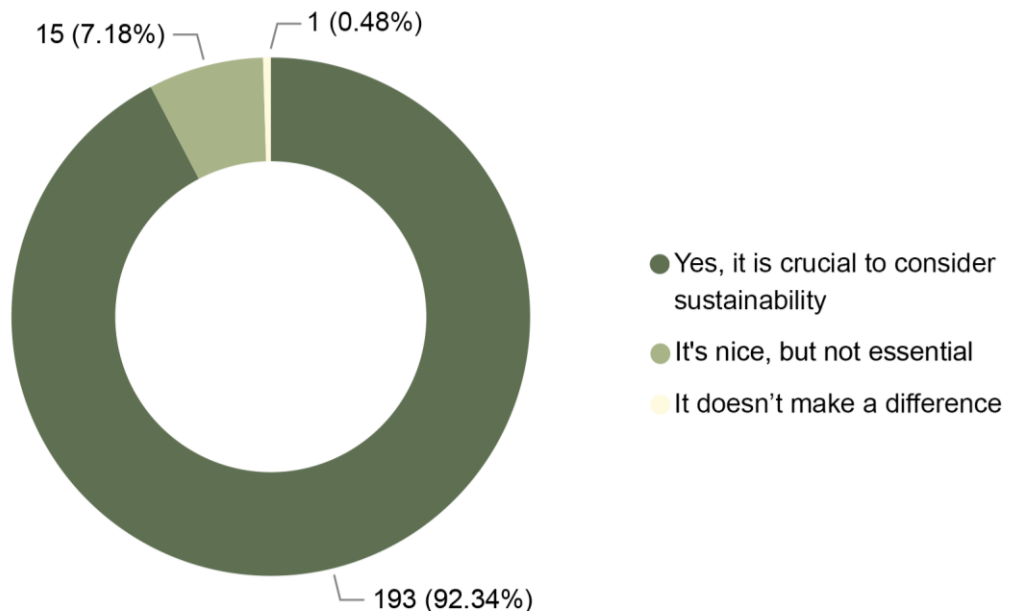


Figure 4.47 Survey results - Do you think it's important for music festivals to promote a sustainable environment? (author).

These statistics hold substantial implications for the music festival industry, underscoring the imperative for organizers to prioritize sustainability initiatives that mitigate ecological harm. This heightened awareness and desire among the public for more eco-conscious festivals can significantly shape marketing strategies, emphasizing eco-friendly practices as compelling differentiators in attracting attendees. The data from Figure 4.47 serves as a clear indicator of the ever-growing significance of green initiatives in the entertainment sector, affirming that addressing environmental concerns is not merely a fleeting trend but a collective expectation shared by the majority of festival-goers.

Figure 4.48 provides crucial insights into the sustainability practices that hold the utmost significance for festival-goers in the context of music festivals. These responses serve as a valuable guide, pinpointing key areas where organizers can focus their efforts to maximize positive environmental and social impacts, aligning their strategies with the preferences and values of their audience.

**Which of the following practices do you consider most relevant in a music festival?**

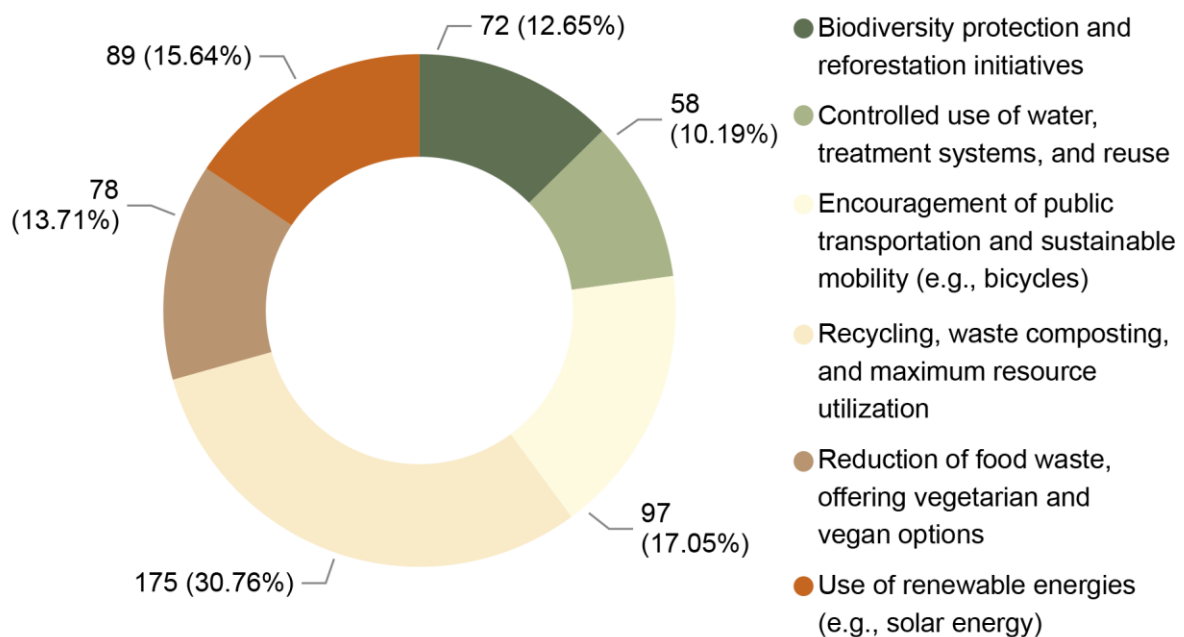


Figure 4.48 Survey results - Which of the following practices do you consider most relevant in a music festival? (author).

The response regarding the use of renewable energies underscores the audience's interest in adopting clean and renewable energy sources to meet the festivals' demands, reaffirming the importance of reducing the carbon footprint associated with the energy consumption of these events. The portion referring to recycling and resource utilization appears to be prevalent, highlighting waste management as a central practice for sustainability and recognizing the need to reduce the impacts of generated waste. The feedback related to the use of public transportation emphasizes the importance of sustainable mobility, promoting transportation management plans and reducing traffic congestion during festivals. Results also show considerable interest in issues such as water conservation, ecologically responsible food choices, and biodiversity preservation, with consistent findings indicating that the audience has a comprehensive understanding and recognizes the plural importance of adopting various practices that provide environmental and social benefits.

Figure 4.49 reflects a diversified view of the positive impacts of music festivals on the local community, covering various aspects and demonstrating that festivals play a multifaceted and significant role in developing the areas where they occur.

**What is the biggest positive impact of music festivals on the local community?**

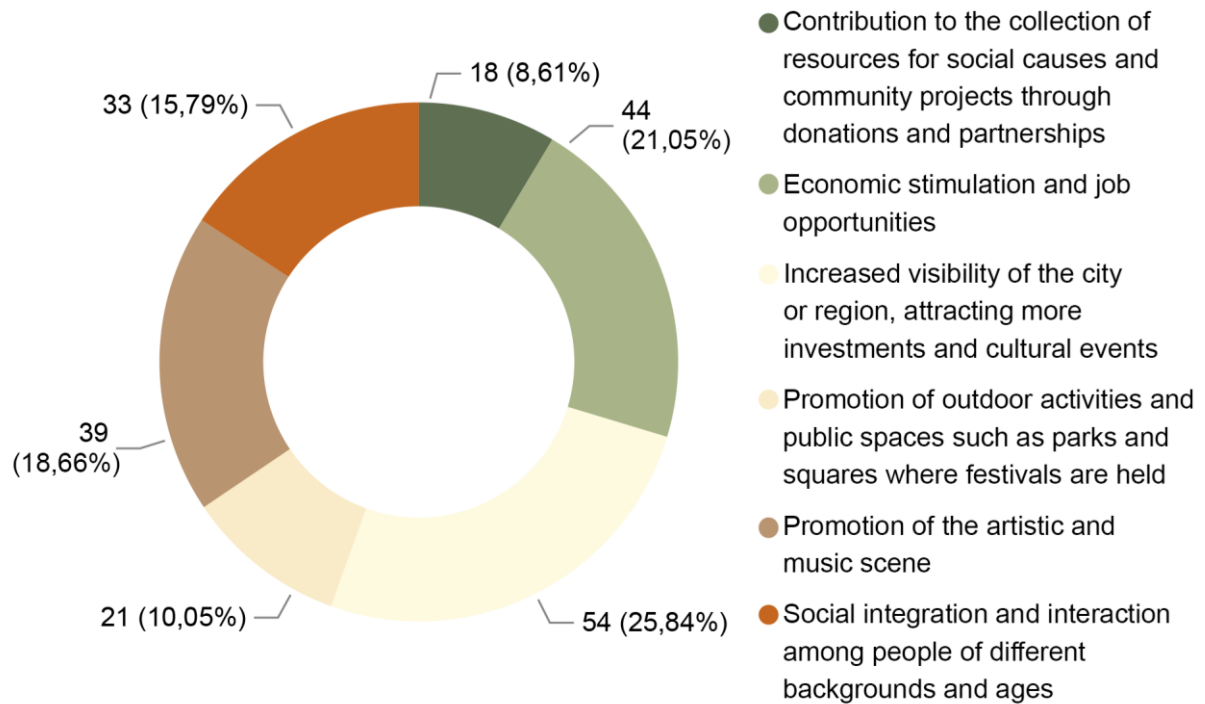


Figure 4.49 Survey results - What is the biggest positive impact of music festivals on the local community? (author).

Promoting the artistic and musical scene underscores the festival’s role as a platform for emerging and established artists, strengthening culture, and suggesting that festivals can act as catalysts for creativity and artistic expression. Economic stimulus and employment opportunities highlight their importance as drivers of the local economy through tourism, ticket sales, among other factors. Additionally, festivals can create temporary and permanent jobs, promoting employability benefits. Social integration reflects the festival’s ability to unite different people, promoting social cohesion by creating spaces that transcend cultural barriers. Increased regional visibility demonstrates how festivals can contribute to positioning a location on the cultural and tourist map, generating public interest and attracting long-term investments. Promoting outdoor activities underscores the importance of utilizing urban and natural spaces to revitalize and promote their use. Contributions to fundraising for social causes demonstrate how festivals can be used as platforms to raise awareness. The results indicate that music festivals can be transformative agents of diverse impacts.

Figure 4.50 provides a comprehensive view of the main negative impacts of music festivals on the local community, where responses address various concerns and highlight the critical challenges for the areas where they are held.

**What is the biggest negative impact of music festivals on the local community?**

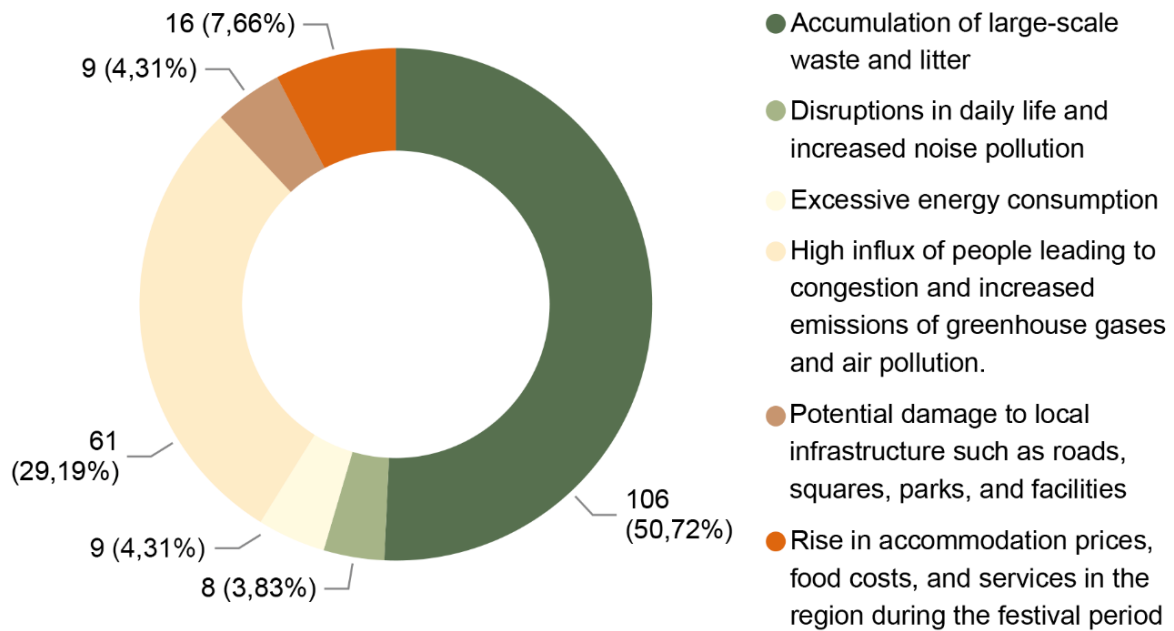


Figure 4.50 Survey results - What is the biggest negative impact of music festivals on the local community? (author).

Excessive energy consumption points to the significant demand for fuels, electricity, and resources during festivals, which can strain the local infrastructure and increase the event's carbon footprint. The accumulation of large-scale waste and trash is the most frequently cited negative impact, underscoring the need for effective waste management solutions to address the massive waste production, ensure proper disposal, and clean the event area. Disruptions to daily life and increased noise pollution indicate discomfort caused to the local community due to noise levels and commotion associated with the intense influx of people. Possibilities of infrastructure damage raise concerns about the degradation of roads, squares, parks, and other public facilities used by the population. Rising prices for accommodations, food, and services reflect the pressure on local resources and the economic impact on residents in the area. The intense flow of people and resulting traffic congestion highlight apprehensions about mobility and air quality. While music festivals can bring many benefits, they also face significant challenges. It is necessary to minimize harm and maximize benefits for all parties involved.

Figure 4.51 highlights the public's perception and expectations regarding the responsibility of music festivals to quantify and disclose their economic, social, and environmental impacts. The responses reflect a strong demand for transparency and accountability from event organizers, revealing that most participants value assessing and disclosing these impacts.

**Is it important for festivals to quantify their social, economic, and environmental impacts and make this information freely accessible to the public?**

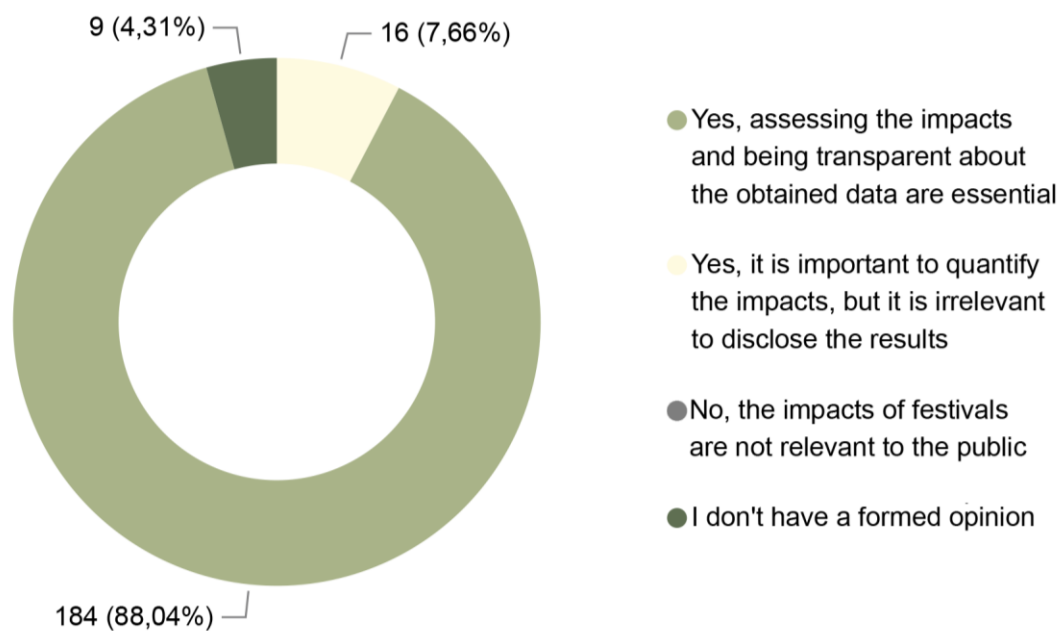


Figure 4.51 Survey results - Is it important for festivals to quantify their social, economic, and environmental impacts and make this information freely accessible to the public? (author).

The quantity of responses stating that transparency regarding the obtained data is essential indicates that the public considers the quantification of impacts and the availability of this data to be fundamental. This suggests that people want to be informed about the extent of these impacts. The response that values quantification but not the disclosure of impacts indicates that internal assessment is recognized by the public. However, they see no need to share detailed results with the audience. The smaller portion either does not find relevance in the impacts of festivals or has not formed a definitive opinion on the matter. The results emphasize the need for festival organizers to understand and respond to this demand by providing precise and accessible information, thus building a more positive reputation that demonstrates the level of commitment to social and environmental issues, especially in the communities where they are held.

Figure 4.52 highlights the public's conviction regarding the roles of music festivals in promoting environmental awareness and adopting sustainable practices. The responses reveal different perceptions of the potential of these events to drive behavioral changes related to the environment.

**Can music festivals play an important role in environmental awareness?**

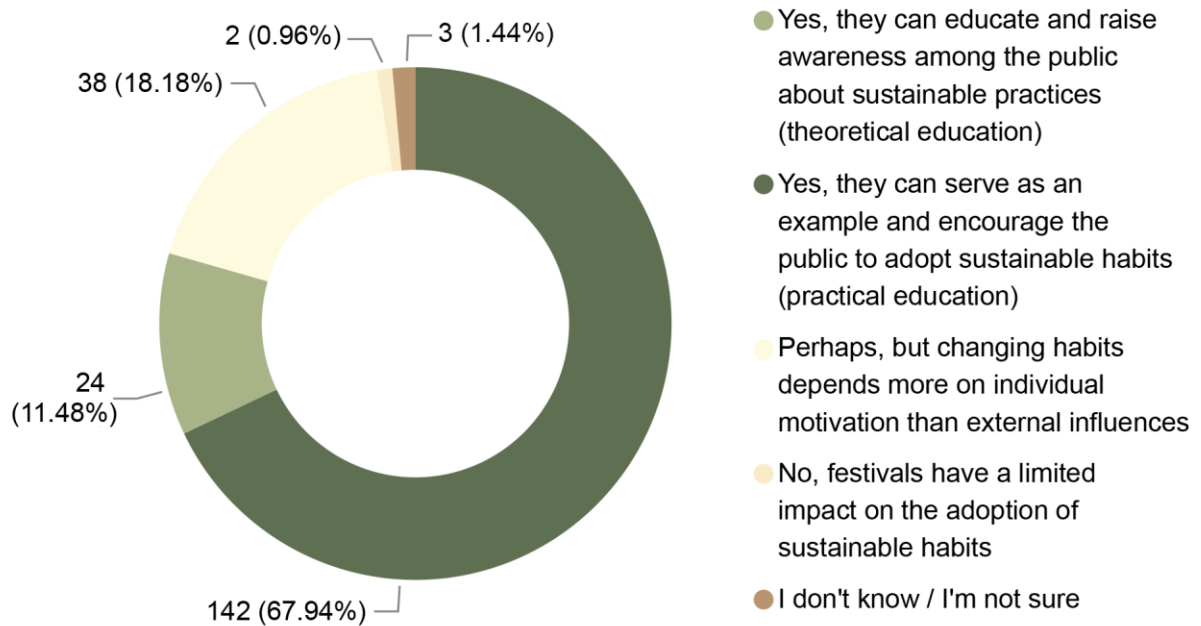


Figure 4.52 Survey results - Can music festivals play an important role in environmental awareness? (author).

The statement regarding theoretical education indicates that some people believe that festivals can play an educational role by providing information and serving as a platform for discussing environmental issues and sharing knowledge.

The response about practical education is predominant and suggests that most of the public believes festivals can influence sustainable behaviors through practical actions. By implementing ecological habits, the public will be directly encouraged to adopt these practices daily. The "perhaps" response implies that the ultimate responsibility for behavior change lies with the individual. The negative responses indicate that a minority does not see festivals as effective for driving behavior change or environmental awareness. Most respondents understand festivals as a means to promote the adoption of sustainable practices, either through education or by example, reinforcing the importance of organizers implementing sustainable measures as a way to create a more ecological experience and as a resource for encouraging more sustainable attitudes.

Figure 4.53 reflects the public's stance on the relationship between the music festival experience and sustainable practices. The positive response demonstrates a widespread belief that adopting sustainable attitudes can add value to festivals. Respondents see an opportunity to promote environmental awareness, encourage a deeper connection with nature, and address global concerns. The negative response indicates that a small portion does not view sustainability-related projects as factors that can influence the quality of the festival experience, possibly believing that the theme is less relevant than other aspects of the festival. Another small portion does not have a formed opinion.

Most people who responded to the survey recognize that green initiatives can positively impact a music festival, especially when they lead to reflections on humanity's influence on the planet and encourage more conscious and engaged perspectives. This understanding highlights the value of environmental responsibility as a tool that drives responsible attitudes and can enrich personal satisfaction and participants' experience during the event. This indicates that adopting sustainable practices should be an integral part of festival organization and what is offered by festival management.

**Do you think sustainable practices can have a positive impact on the experience at a music event?**

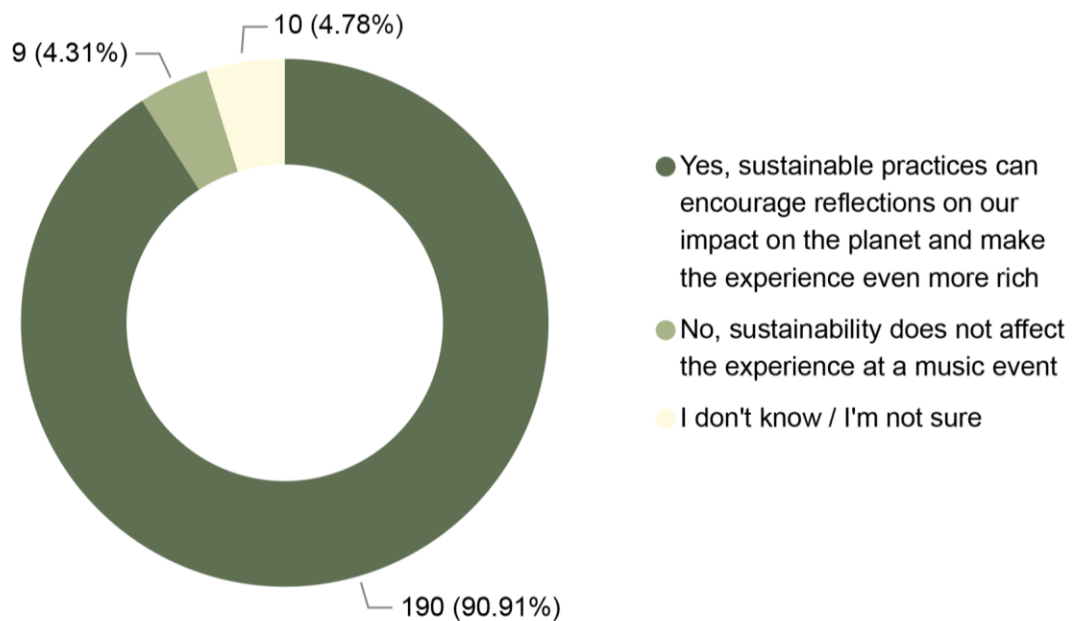


Figure 4.53 Survey results - Do you think sustainable practices can have a positive impact on the experience at a music festival? (author).

Figure 4.54 depicts the public's perceptions of the main obstacles to implementing practices at music events, and their responses highlight various challenges that organizers face when trying to develop sustainability measures at music festivals.

The option of budget constraints highlights a particular focus on the costs associated with implementing ecological projects, indicating that many respondents believe that limitations in funding can hinder the incorporation of eco-friendly solutions, which often require high initial investments to offer long-term returns. The difficulties in measuring and quantifying impacts refer to the scarcity of precise tools to gauge environmental impacts as a barrier, as the absence of concrete data can make it challenging to justify these actions. The lack of awareness and interest underscores the importance of support and collaboration among various stakeholders. Commercial pressures demonstrate a significant challenge in balancing sustainability goals, market demands, and profit-seeking, which may hinder a holistic view. The lack of knowledge suggests that some organizers may be unaware of available options or best practices they could adopt. The results show that overcoming these obstacles will require creative approaches, strategic partnerships, and awareness of long-term benefits.

**What do you consider the biggest barriers to implementing more sustainability in music events?**

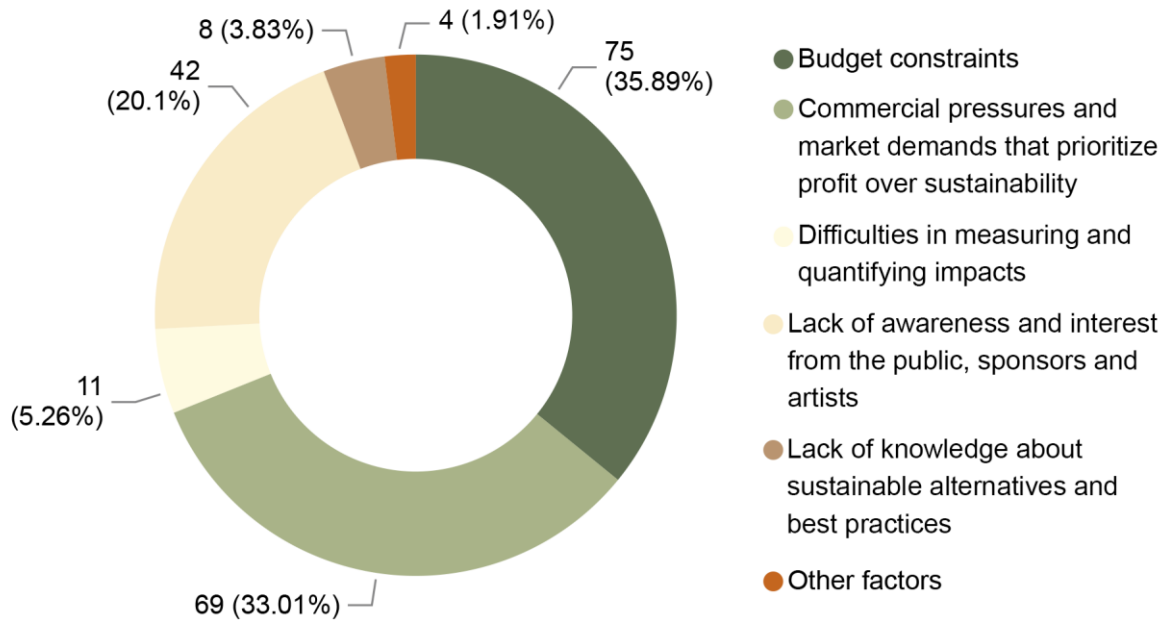


Figure 4.54 Survey results - What do you consider the biggest barriers to implementing more sustainability in music events? (author).

### **Suggestions and comments from participants:**

In addition to the objective survey questions under analysis, a suggestion box was opened, receiving a variety of responses. Participants expressed a range of perspectives and concerns related to various areas. In order to provide a better-structured context, categories were established, including awareness, infrastructure, mobility, public policies, and waste.

#### **Awareness:**

*"Incentive from artists";*

*"Questionnaires during festivals with open-ended questions";*

*"Events should use their influence on social media to encourage the public to adopt sustainable habits in their daily lives";*

*"All music events could have a brief 'lecture' on environmental awareness and the importance of sustainability at the opening";*

*"Considering sustainability, addressing issues of food waste, proper waste separation and disposal, whenever possible."*

These suggestions emphasize the need to involve artists and the audience in creating greater awareness of environmental issues. Ideas like using questionnaires and incorporating sustainability lectures during events demonstrate the desire for music festivals to utilize their broad reach to educate and positively influence the audience.

#### **Infrastructure:**

*"Event structure focused on a more sustainable environment";*

*"Identified and separate waste disposal areas for paper/metal/plastic/organic";*

*"Implement mechanisms to prevent water and energy waste";*

*"I find it positive to have a fixed location designated for these activities, where infrastructure is already in place and can be used flexibly for various artistic activities";*

*"Increasing the number of waste bins to prevent littering and soil contamination";*

*"Selective collection points spread throughout the event space";*

*"Facilitating large bins for different types of waste would improve a lot."*

Participants highlighted the importance of implementing sustainable structures, such as dedicated waste separation areas with adequate capacity and mechanisms to prevent waste. The suggestion to allocate physical spaces for various activities is seen as a way to utilize existing infrastructure for the benefit of the local population.

### **Mobility:**

*"I believe that offering routes with available public transportation";*

*"Festivals providing a transportation network that replaces individual transportation from any part of the country."*

Suggestions related to mobility emphasize the importance of offering accessible and efficient public transportation options. Providing transportation networks that replace the use of private vehicles not only reduces CO<sub>2</sub> emissions but also alleviates congestion and enhances the attendees' experience.

### **Public Policies:**

*"Perhaps using labels and even creating a sustainability label for events, where each classification offers some type of tax reduction or benefit. Unfortunately, this is the only way to initiate awareness";*

*"Municipalities/regions should organize a set of logistics for the event, with rules shared by all stakeholders and spectators";*

*"I believe that cultural incentive laws should impose better/more sustainable foundations for those seeking the offered subsidy, thus promoting more sustainable festivals";*

*"Seek partnership with city governments to involve the public more effectively, as a collective effort aiming for environmental improvement through responsible parties is better than individual or corporate efforts where economic interests often take precedence";*

*"Legislation could create incentives or penalties if we don't have clear information about the ESG taxes of festivals";*

*"Encouragement of local employment."*

The public policy approach is essential for promoting sustainability in festivals. Creating sustainability labels with tax incentives, organizing logistics shared among stakeholders, and improving cultural incentive laws are suggested ways to involve both the public and private sectors in mitigating the negative environmental impacts of festivals.

## **Waste and Emissions:**

*"Promote the use of paperboard cups and straws, and other measures that encourage lower environmental impact provide a different experience beyond expectations";*

*"Reduction of single-use plastics";*

*"Distribution of trash bags";*

*"Use less smoke in attractions and reduce the use of fire due to CO<sub>2</sub> emissions";*

*"Use of renewable energy sources, promotion of consumption of locally sourced foods, waste recycling, use of biodegradable cups (some festivals have merchandise), requiring establishments selling at festivals to meet certain requirements related to environmental impact";*

*"Distributing reusable items at the entrance of each festival to help make festivals more sustainable";*

*"Reduction of disposable items";*

*"Use of renewable energy, consumption of local products."*

Waste management and emissions reduction are fundamental pillars of sustainability at festivals. Suggestions such as using biodegradable utensils, reducing single-use plastics, distributing trash bags, minimizing smoke and fire use, and promoting renewable energy and local products all demonstrate a practical concern for reducing environmental impact.

Globally, these suggestions reflect the growing awareness of the importance of sustainability in music festivals. They illustrate a collective desire for these events not only to provide entertainment but also to act as drivers of awareness and environmental action. The implementation of these and related proposals has the potential to give festivals a significant role in promoting a more sustainable future and motivating positive changes in audience behavior. Despite the challenges involved, the belief that music festivals can effectively catalyze positive changes and inspire the adoption of environmentally responsible lifestyles remains a driving force in the pursuit of a more sustainable creative industry.



## 5. DISCUSSION

Finding consistent and well-founded information about the environmental responsibility and sustainability practices of music festivals can be complex due to the diversity of available sources, the reliability of data sources, and the variation in metrics and indicators used. Data collection, particularly on official platforms, faces barriers due to outdated information or the absence of detailed materials, making it challenging to assess these events' progress in sustainability. This study acknowledges the demand for this data; however, without access to reliable information, researchers, stakeholders, and the general public are limited in their ability to understand the actual impacts of these events. Other issues affecting data collection include refusals to respond or a lack of adequate means of contact with event organizers. This lack of cooperation can occur for various reasons, including concerns about disclosing confidential information, a lack of resources to collect and share data, or simply a lack of prioritization of transparency and accountability regarding sustainability practices.

It is essential to recognize that producing comprehensive sustainability reports requires significant resources in data collection and report preparation. In the future, encouraging events to compile and share their reports, even in summary form, may be crucial in promoting a culture of environmental and social responsibility in the festival industry. This provides richer information for analysis and evaluation, reflects a positive attitude toward accountability and demonstrates a more solid commitment to sustainability.

In the analyzed case studies, it is evident that there is no uniform standard in the information provided by sustainability reports. Events often have divergent objectives and adopt varied approaches in presenting and detailing implemented sustainable initiatives. These differences can be attributed to various factors, such as the unique nature of each festival, its specific priorities, and the target audience it aims to reach. While some reports may focus on raising public awareness of their sustainable actions, others may highlight their achievements to business partners or regulatory authorities. The absence of a standardized model can lead to variations in the quantity and quality of information disclosed. While some initiatives may be described in detail, others may be mentioned superficially. This inconsistency can pose challenges for researchers, analysts, and stakeholders seeking to understand the approaches and their effectiveness. Creating specific guidelines for sustainability reporting in the music event industry could be an important step toward disseminating best practices. Some monitoring data, such as

natural resource consumption, carbon emissions, waste generation, energy efficiency, and social impacts, play a fundamental role in assessing progress and adjusting sustainability strategies. The consistent collection, analysis, and disclosure of this information enable organizers to identify areas that need improvement, track trends over time, make informed decisions, and ensure that applied efforts are effective, reliable, and impactful. This requires ongoing commitment from management to implement robust monitoring and reporting systems to achieve sustainability policies that prove their effectiveness.

It is important to acknowledge that the effectiveness and representativeness of the survey results applied to the audience can be influenced by various limitations, both in terms of time and scope. As more people participate and the response collection period extends, the obtained information becomes richer and more comprehensive. Nevertheless, the audience research conducted plays an essential role in collecting information about participant perceptions and provides valuable insights that can help better understand areas of success and opportunities for improvement in music festivals. It also informs about awareness levels and engagement related to sustainability practices.

Music festivals can play a significant role in adopting sustainable measures and raising public awareness, especially in the face of climate change, which has transformed people's perceptions regarding the importance of preserving the environment and promoting a more sustainable lifestyle. The development of these considerations can also be seen as a motivator for events to intensify their efforts. Recognizing the relevance of issues related to environmental responsibility in music festivals is a positive indicator of a cultural shift toward greater engagement with environmental protection. These festivals have the opportunity to educate and inspire participants to adopt environmentally conscious and responsible behaviors, both during the event and in their daily lives.

Events of this magnitude impact not only the environment but also have significant consequences for the cities and regions where they take place. The visibility established by a successful festival can result in increased tourism, which, in turn, boosts the local economy. Beyond financial aspects, this visibility tends to have political and social implications, such as producing a progressive image that may influence government decision-making, encourage collaboration for cultural development, and strengthen the sense of community among residents, contributing to the formation of collective identity and local pride. Given the above, it is essential to consider that the positive impacts of these festivals go beyond entertainment and music, transforming cities and reaching economic, political, and social spheres. At the same time, the negative consequences represent significant challenges and are directly related to imminent ecological and environmental implications on various scales.

## CONCLUSION

Music festivals play a relevant role in society, and their significance can be understood from various perspectives. In recent years, there has been a significant growth in the number and popularity of these events, turning them into important promoters and agents of change for cities (Giurgea et al., 2023; Cudny, 2014; V. Pavlukovic et al., 2017; Mair and Laing, 2012; Smith et al., 2022). However, sustainability issues related to the phenomenon of festivals, despite their relevance, have not yet been sufficiently discussed and elaborated in the literature. There is more research on the topic through tourism and event management, which positively contributes to the studies. Still, festivals, as such rich and complex entities, have the potential to be explored from a scientific perspective since different events face very similar challenges, which are serious and have significant impacts (Zifkos, 2015).

This study aims to conduct an analysis of the largest contemporary music festivals, examining them from the perspective of environmental responsibility. To do so, an investigation was carried out based on the data provided by the organizations responsible for these events, with the goal of not only uncovering a comprehensive overview of the environmental impacts caused by such festivals but also understanding how these impacts resonate in the human experience. Furthermore, this study aims to assess the level of engagement and commitment of these festivals to society and the environment on a broader scale. This includes an analysis of their practices and efforts to reduce negative impacts and initiatives to raise awareness about environmental and social issues. The objective is not only to evaluate the role of these cultural celebrations in shaping collective consciousness regarding environmental and social challenges but also to understand how they can act as catalysts for positive societal changes.

The environmental strategies developed by festivals have primarily focused on the immediate environmental impacts of their activities and operations, such as promoting the use of renewable energy, minimizing waste production, water conservation, controlling light and noise pollution, waste reduction, and encouraging the use of public transportation (Collins and Cooper, 2007; Fleming et al., 2014; Collins and Potoglou, 2019; Mair and Laing, 2012). This represents a significant advancement for the large-scale event industry but only partially addresses the generated impacts. To develop strategies to reduce the global use of resources and greenhouse gas emissions, it is necessary to comprehensively understand the demands of festivals and their consequences beyond the event venues (Collins and Cooper, 2007).

In this dissertation, by analyzing various authors' perspectives, it was possible to identify the prominent impacts of music festivals on city dynamics. Additionally, major sustainability certifications were examined, along with their assessment and certification processes, and how they contribute to the development of music festivals with a more environmentally responsible approach. A central aspect of this study was the analysis of the 136 largest global music festivals, classified based on daily attendance. Subsequently, the top 35 positions in the ranking were selected for evaluation in different dimensions and parameters, such as awareness, energy, food, mobility, resources, sewage, social, waste, and water. Moreover, a public survey was conducted to understand the perspectives and needs of the audience at large-scale music festivals.

It should be noted that throughout the course of this study, several attempts were made to communicate with the organizations responsible for the music festivals in question. However, only a limited number of events chose to make their sustainability reports publicly available. These events include Rock in Rio (Brazil), Rock in Rio Lisboa (Portugal), Sziget (Hungary), Leeds Festival (United Kingdom), and Download Festival (England). Consequently, they were selected as objects of study, allowing for an in-depth analysis of their individual information. Nevertheless, it is important to observe that the lack of uniformity in the data presented in sustainability reports poses challenges to comparative analysis among different events. The ultimate goal is to contribute to the promotion of more conscious and sustainable music festivals that can play a positive role in cities and society as a whole.

The development of this study encountered several limitations that, while challenging, provided valuable insights. Firstly, the presence of a large number of music festivals in the contemporary landscape brought significant complexity. The selection of events to be analyzed required a careful screening process. Additionally, there was a shortage of specialized literature, with a limited number of studies dedicated exclusively to sustainability in music festivals. Another significant challenge was the difficulty of establishing contact with organizers and obtaining updated information, which directly impacted the quality and scope of the collected data. Furthermore, there is a lack of public policies and specific certifications for music festivals, leading to a low level of government demand, little incentive to adopt sustainability guidelines, and limited adaptability of these guidelines to different geographical regions.

It is important to recognize that the effectiveness and representativeness of the results from the audience survey can also be influenced by various limitations, both in terms of time and reach. As more people participate and the response collection period extends, the obtained information becomes richer and more comprehensive. Nevertheless, the audience research conducted plays an important role in gathering information about participants' perceptions and provides valuable insights that can help better understand areas of success and opportunities for improvement in music festivals, as well as inform about the levels of awareness and engagement related to sustainability practices.

There are several conflicts and challenges in defining appropriate evaluation methods for music festivals since these methods appear to be partial in their scopes, each with its strengths and limitations. For example, biophysical assessment methods that rely on air, soil, water, or ecosystem sampling cannot quantify impacts that occur beyond the physical space occupied by the festival, such as emissions

from transportation and energy consumption. Another complexity in identifying impacts lies in the absence of standardization of measurement units for indicators, making comparisons and recognizing areas where efforts should be concentrated challenging (Collins and Cooper, 2017). Thus, in facing these limitations, it was necessary to strike a balance between the depth of analysis and the restrictions imposed by the circumstances. The research sought to overcome these challenges and provide a comprehensive view of music festivals regarding sustainability, recognizing that, while the limitations were significant, they do not invalidate the importance of investigating the impact of these cultural events on society and the environment.

Some music festivals have presented strategies to mitigate climate change, but there remains uncertainty regarding declared intentions and practical actions taken by organizers. The gap between discourse and practice continues to be a pertinent issue. This is because, in many cases, promises of sustainable practices may appear more vibrant in rhetoric than in operational reality. Many of these events superficially use the "green" status as a marketing tool, differentiating themselves in the market and engaging stakeholders (Mair and Laing, 2012). However, using the term "sustainable" to describe festivals may be misleading, as sustainability extends beyond environmental concerns. Sustainability should mean much more than merely incorporating "green" or "eco-friendly" practices into the management of these events (Zifkos, 2015).

In an era where environmental concern has become a critical element of public image and organizational reputation, it is essential to go beyond words and establish a commitment to the effective implementation of sustainable practices. In this context, transparency and accountability emerge as crucial elements to assess whether the measures adopted are genuinely aligned with the environmental goals of these events. This is where sustainability certifications stand out as essential tools. By earning awards and certifications, music festivals validate their efforts toward environmental responsibility and provide performance evaluations and relevant data to the public and other stakeholders (Marchini, 2013). For an event to be truly sustainable, principles of sustainable development must be integrated at all stages, including conception, design, planning, execution, and review, through the lens of an Event Sustainability Management System, such as ISO 20121 (ISO 20121, 2012; Sánchez and Hernández, 2022).

The results obtained in this study contribute to understanding the primary impacts associated with music festivals, emphasizing the importance of sustainability certifications, monitoring, and assessing the harm inflicted on society and the environment. This will enable the development of appropriate solutions and monitoring of their effectiveness over time. It also highlights the need for substantial changes in the festival industry, contributes to understanding the perspectives of organizing entities and the audience, and points to the demand for ongoing efforts to confront and mitigate the intrinsic challenges of producing these events. Furthermore, it underscores that public awareness of environmental issues and the inclusion of educational initiatives during festivals have the potential to catalyze behavioral changes and promote a more sustainable mindset among participants. In this regard, music festivals can act as powerful agents of transformation.

Given the diversity of available information, the lack of standardization, and inconsistency, a significant challenge arises for future research. It is the need to cross-reference data from different music festivals to enable comparisons related to energy consumption and per capita emissions. This comparative analysis is crucial for evaluating the effectiveness of practices adopted by each event in pursuit of greater sustainability. Furthermore, the cross-referencing of data between music festivals and various large-scale events, such as celebrations, sports championships, religious gatherings, and concerts, may unveil relevant aspects regarding their different forms of integration and impacts on cities. Another opportunity for the continuation of this study is related to the construction of a matrix of minimum information required for the provision of certifications, which should be made available through their sustainability reports. The implementation of this standard should occur while considering a series of specificities, such as geographical and dimensional aspects. The systematization of these documents would enable a global approach, making the assessment of the environmental responsibility of music festivals worldwide more transparent and uniform.

The COVID-19 pandemic has underscored the scarcity of natural resources and further intensified the pressure and questions regarding ecological awareness. In response, the large events industry had to adapt to new conditions of normality. This could be a significant opportunity to implement changes and improvements in event management and planning. In light of the resolutions of COP26 (COP26, 2021), the reduction of negative impacts from emissions needs to be considered a top priority for change to occur. It is time to seek ways to create memorable experiences while considering sustainability demands (Giurgea et al., 2023).

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## ANNEXES

### Annex A: Festivals organization survey

Questions:

1. In general, can we consider that *EVENT NAME* demonstrates concern for sustainability issues?
2. Are there any sustainability goals to be achieved? If so, what are they?
3. Is data collected on energy consumption, CO<sub>2</sub> emissions, or waste generation? Which of these?
4. Does *EVENT NAME* develop a sustainability report? If so, is the report made available to the public?  
How can the public access this document?
5. Does *EVENT NAME* take place in a location with good mobility and public transportation options?  
What is the main means of transportation used to get to the event?
6. Are there any actions taken to reduce the environmental impacts of transportation used within the event (mobility of artists, products, and services)?
7. Is data collected on the impacts on the surrounding area during the festival (congestion, noise, safety, local economy, etc.)?
8. During periods when *EVENT NAME* does not occur, is the space used for other purposes? Is it used by the community living in the surrounding area?
9. In the last editions, were measures taken that benefited sustainability issues? What were they? Was the effectiveness of these actions evaluated?
10. Is there direct communication with the public, through campaigns and social media, that promotes environmental awareness?
11. How is sustainability encouraged and developed in *EVENT NAME*?

## Annex B: ISO 20121 Maturity Matrix

Example of Maturity Matrix: The approach taken by the organization regarding sustainability (adapted from ABNT NBR ISO 20121:2012. pp. 36-38)

| Principle  | Minimum  | Improvement  | Engaged  |
|--|--|--|--|
| Inclusion<br><br>How stakeholders are engaged and how issues are identified and addressed.   | A limited number of stakeholders consulted. Limited amount of information shared. Limited options given to stakeholders on how they can be involved. Limited time and resources provided for issue identification. | Comprehensive list of stakeholders created. All stakeholders are given the opportunity to respond in a structured and fair manner. Key issues addressed. Lessons learned in addressing key issues shared with the group, including using this acquired knowledge as part of marketing with the goal of creating a competitive advantage. | Ongoing engagement with stakeholders. Ongoing education of stakeholders. Consideration of issues in a structured manner. Taking action to address all issues. Considering stakeholder responses when addressing issues.                          |
| Integrity<br><br>How the approach is open, honest, and transparent                           | Short-term profit. Immediate financial and reputation gains. Reaction in response to shareholder/stakeholder/pressure group demands. Reaction to market trends with minimal response.                              | Consideration of how proper development can affect the organization's reputation or pose a risk. Reaction in response to the behavior of other companies toward sustainability.  | Long-term business development and profit. Implementation of sustainability as a strategic process and advantage aligned with the broader organizational strategy, including mission, vision, and goals.   |
|  | Application of standards only when legally required. Application of sustainable initiatives only when legally required.  | Application of standards that could affect the organization's reputation. Application of standards aligned with the business vision and mission. Application of sustainability initiatives under pressure from stakeholders (e.g., community engagement programs).   | Application of all relevant industry standards. Clearly written and communicated sustainable development policy. Personnel, suppliers, and stakeholders are aware, understand, and behave in accordance with the sustainable development policy. |
| Management<br><br>How this topic has been managed by suppliers, stakeholders, internal teams | Compliance only with legal requirements. No focus on sustainability.   | Sustainability is a marketing/public relations initiative. Basic internal sustainability program exists, involving a limited number of personnel.  | All well-trained personnel are capable of changing their work methods and implementing increased sustainability with a reward/incentive scheme. The Company's sustainability lessons learned are shared externally with groups.                  |
|  | Minimal training provided. No education specifically on green sustainability.  | Provided sustainability education for new employees. Limited education plan available.   | All trained personnel are capable of adapting their work methods and implementing increased sustainability with a reward/incentive scheme. Lessons learned through sustainability are communicated externally to groups.                         |
|  | Suppliers are chosen based solely on price. Payment to   | Payment to the supplier is within the schedule set by  | Payment to the supplier is immediate. Sustainable pro-   |

|   |   |  |   |
|---|---|--|---|
|   | the supplier is delayed for as long as possible.  | the supplier. Some sustainability factors are considered, including supplier location and types of materials used. | curement strategy implemented. Suppliers are requested to share their sustainability development policy and demonstrate their commitment to sustainability. Suppliers are considered in all factors, including location, transportation used, materials used, cost, equal opportunity employment, employment for people with disabilities, and the material's post-use life. Educational assistance and incentives are provided to small or new suppliers regarding sustainability. |
|   | No assessment has been conducted. Lack of awareness about environmental assessments.              | Basic environmental standards and policies applied. Basic internal training provided on environmental assessments. | Potential environmental impacts and risks considered, and business decisions made based on these considerations.  |
| Transparency<br>How clear the approach is | No one acts on the response or considers the response as a lesson learned to adopt in the future. | Response critically analyzed only by middle management. Response critically analyzed but with limited action.      | All levels of the Company are exposed, pay attention, and implement the lesson learned from the response.   |
| How this affects the future               | Not considered, no one reports on sustainability.   | Selective elements are considered.   | All elements are considered. Reports are prepared and shared with all stakeholders.   |

## Annex C: Table of Issues to be Considered ISO 20121

List of issues to be considered by organizations in addressing issue identification and assessment (adapted from ABNT NBR ISO 20121:2012. p 45-46).

| Issue   | Description and Comments   |
|---|--|
| Food and beverages                              | Food and beverage supply services are accessible, offer choice and balance, and are safe and hygienic.   |
| Occupational health and safety                  | Activities with significant risk of impacting the health and safety of contracted labor, volunteers, and the supply chain.   |
| Human development and workplace training        | Workforce by job type, contract, and region, and programs for skills management and continuous workforce and supply chain employability support.   |
| Illicit drugs and doping                        | Activities with significant risk involve the use of illicit drugs and doping.  |
| Indirect economic impacts                       | Indirect economic impacts, including the development of any infrastructure, employment opportunities, services provided to the public, and profit sharing in a fair manner.  |
| Market presence                                 | Practices regarding expenditures on local suppliers and local hiring.  |
| Prevention of prohibited chemical use           | Prevention of the use of prohibited chemicals and, when possible, chemicals identified by scientific bodies or any other concerned stakeholders.   |
| Emission reduction                              | Emissions related to greenhouse gases, ozone-depleting substances, pollutants (e.g., NO, SO, and particulate matter), water discharges, and overflow.  |
| Biodiversity and natural preservation           | Valuing and safeguarding the diversity of life in all its forms, protecting and restoring ecosystem services and the sustainable use of land and natural resources in connection with the event site, food and beverage supply (e.g., endangered species), and material use, etc.              |
| Resource utilization                            | Activities at risk of not using resources, including energy, water, and materials, responsibly and efficiently, by substituting or combining non-renewable resources with renewable and sustainable ones, for example, by using innovative technologies. Also, consider resource conservation. |
| Safety practices                                | Safety policies and procedures (including addressing the special needs of individuals with disabilities in emergency systems design and evacuation) and human rights.  |
| Supply and procurement of products and services | Sustainability criteria according to this list for supply and procurement activities.  |
| Transportation and logistics                    | Impacts of transportation of people (access to transportation for people with disabilities) and goods.   |
| Water and sanitation                            | Good-quality and easily accessible water or those affected by regional restrictions (e.g., water scarcity). Sustainable sanitation solutions.  |
| Event venues                                    | Event site location and credentials (e.g., Brownfield, Greenfield, existing event site).   |
| Waste   | Prevention, reduction, diversion, and management of waste.   |
| Noise   | Unacceptable noise levels in the surrounding community.  |

## Annex D: Table - 135 Largest music festivals

| Nº | Event name                           | First year | Country      | Continent     | Location          | Context | Access      | Average attendance | Days | Daily attendance | Ref. year | References                   |
|----|--------------------------------------|------------|--------------|---------------|-------------------|---------|-------------|--------------------|------|------------------|-----------|------------------------------|
| 1  | Donauinselfest                       | 1984       | Austria      | Europe        | Island park       | Urban   | Free        | 3.300.000          | 3    | 1.100.000        | 2015      | Guinness World Records       |
| 2  | Street Parade                        | 1992       | Switzerland  | Europe        | Around the city   | Urban   | Free        | 900.000            | 1    | 900.000          | 2022      | Street Parade                |
| 3  | Mawazine Rabat                       | 2001       | Morocco      | Africa        | Around the city   | Urban   | Free + paid | 2.750.000          | 9    | 305.556          | 2019      | Mawazine                     |
| 4  | Montreal International Jazz Festival | 1980       | Canada       | North America | Event blocks      | Urban   | Free + paid | 1.913.868          | 10   | 191.387          | 2004      | Guinness World Records       |
| 5  | Pol'and'Rock Festival                | 1995       | Poland       | Europe        | Airfield          | Rural   | Free        | 750.000            | 4    | 187.500          | 2019      | Explore Poland               |
| 6  | MDLBEAST Soundstorm                  | 2019       | Saudi Arabia | Africa        | Event park        | Urban   | Paid        | 730.000            | 4    | 182.500          | 2021      | CNN                          |
| 7  | Electric Daisy Carnival (EDC)        | 1997       | USA          | North America | Stadium           | Urban   | Paid        | 520.000            | 3    | 173.333          | 2023      | Electronic Vegas             |
| 8  | Primavera Sound                      | 2001       | Spain        | Europe        | Event park        | Urban   | Paid        | 500.000            | 3    | 166.667          | 2022      | Kliger                       |
| 9  | Edinburgh Festival Fringe            | 1947       | Scotland     | Europe        | Around the city   | Urban   | Free + paid | 3.012.490          | 21   | 143.452          | 2019      | Edinburgh Festival City      |
| 10 | ESSENCE                              | 1995       | USA          | North America | Stadium           | Urban   | Paid        | 500.000            | 4    | 125.000          | 2022      | Essence                      |
| 11 | Lollapalooza Argentina               | 2014       | Argentina    | South America | Hippodrome        | Urban   | Paid        | 330.000            | 3    | 110.000          | 2023      | Bitar                        |
| 12 | EDC Mexico                           | 2014       | Mexico       | North America | Racetrack         | Urban   | Paid        | 305.000            | 3    | 101.667          | 2023      | Razón                        |
| 13 | Rock in Rio                          | 1985       | Brazil       | South America | Event park        | Urban   | Paid        | 700.000            | 7    | 100.000          | 2022      | G1                           |
| 14 | Tomorrowland                         | 2005       | Belgium      | Europe        | Park              | Urban   | Paid        | 600.000            | 6    | 100.000          | 2022      | Tomorrowland                 |
| 15 | Lollapalooza USA                     | 1991       | USA          | North America | Park              | Urban   | Paid        | 400.000            | 4    | 100.000          | 2019      | Roti                         |
| 16 | Lollapalooza Brazil                  | 1991       | Brazil       | South America | Racetrack         | Urban   | Paid        | 300.000            | 3    | 100.000          | 2023      | Oliveira, L. and Rosário, M. |
| 17 | EDC Orlando                          | 2011       | USA          | North America | Stadium           | Urban   | Paid        | 300.000            | 3    | 100.000          | 2021      | Fox 35 Orlando               |
| 18 | Summer Sonic                         | 2000       | Japan        | Asia          | Island event park | Urban   | Paid        | 300.000            | 3    | 100.000          | 2019      | Summer Sonic                 |
| 19 | Coachella Valley Music and Arts      | 1999       | USA          | North America | Event park        | Urban   | Paid        | 594.000            | 6    | 99.000           | 2019      | GQ                           |
| 20 | UNTOLD Festival                      | 2015       | Romania      | Europe        | Stadium           | Urban   | Paid        | 372.000            | 4    | 93.000           | 2019      | Lica                         |
| 21 | Festival Interceltique de Lorient    | 1971       | France       | Europe        | Around the city   | Urban   | Free + paid | 900.000            | 10   | 90.000           | 2022      | Statista                     |
| 22 | Amsterdam Dance Event (ADE)          | 1995       | Netherlands  | Europe        | Around the city   | Urban   | Free + paid | 450.000            | 5    | 90.000           | 2022      | Sunkel                       |
| 23 | Country Music Association Festival   | 1972       | USA          | North America | Stadium           | Urban   | Paid        | 360.000            | 4    | 90.000           | 2023      | Shoup                        |
| 24 | Rock Werchter                        | 1975       | Belgium      | Europe        | Field             | Urban   | Paid        | 352.000            | 4    | 88.000           | 2023      | E. Business                  |
| 25 | Lollapalooza Berlin                  | 2015       | Germany      | Europe        | Event park        | Urban   | Paid        | 170.000            | 2    | 85.000           | 2019      | Hardeveld                    |
| 26 | HARD Summer                          | 2007       | USA          | North America | Event park        | Urban   | Paid        | 160.000            | 2    | 80.000           | 2021      | Brown                        |
| 27 | Austin City Limits (ACL)             | 2002       | USA          | North America | Park              | Urban   | Paid        | 450.000            | 6    | 75.000           | 2022      | Watts                        |
| 28 | Lollapalooza Chile                   | 2011       | Chile        | South America | Event park        | Urban   | Paid        | 225.000            | 3    | 75.000           | 2022      | Reyes                        |
| 29 | Leeds Festival                       | 1999       | England      | Europe        | Event park        | Rural   | Paid        | 225.000            | 3    | 75.000           | 2022      | Mehers                       |
| 30 | Stagecoach Music Festival            | 2007       | USA          | North America | Event park        | Urban   | Paid        | 225.000            | 3    | 75.000           | 2018      | All Festival Tickets         |
| 31 | Outside Lands Music and Arts         | 2008       | USA          | North America | Event park        | Urban   | Paid        | 222.518            | 3    | 74.173           | 2022      | King                         |
| 32 | Rock in Rio - Lisbon                 | 2004       | Portugal     | Europe        | Park              | Urban   | Paid        | 287.000            | 4    | 71.750           | 2022      | RiR Lisboa                   |
| 33 | NOS Alive                            | 2007       | Portugal     | Europe        | Beach             | Urban   | Paid        | 210.000            | 3    | 70.000           | 2022      | Cipriano                     |
| 34 | SZIGET                               | 1993       | Hungary      | Europe        | Island event park | Urban   | Paid        | 420.000            | 6    | 70.000           | 2023      | About Hungary                |

| Nº | Event name                           | First year | Country     | Continent     | Location          | Context | Access | Average attendance | Days | Daily attendance | Ref. year | References           |
|----|--------------------------------------|------------|-------------|---------------|-------------------|---------|--------|--------------------|------|------------------|-----------|----------------------|
| 35 | Boomtown Fair                        | 2009       | England     | Europe        | Racetrack         | Rural   | Paid   | 330.000            | 5    | 66.000           | 2022      | Rudland              |
| 36 | New Orleans Jazz and Heritage        | 1970       | USA         | North America | Racetrack         | Urban   | Paid   | 460.000            | 7    | 65.714           | 2023      | Spera                |
| 37 | Lollapalooza French                  | 2017       | France      | Europe        | Hippodrome        | Urban   | Paid   | 130.000            | 2    | 65.000           | 2022      | Statista             |
| 38 | Summerfest                           | 1968       | USA         | North America | Event park        | Urban   | Paid   | 624.407            | 10   | 62.441           | 2023      | Weiland              |
| 39 | Mad Cool Festival                    | 2016       | Spain       | Europe        | Stadium           | Urban   | Paid   | 305.000            | 5    | 61.000           | 2022      | TeleMadrid           |
| 40 | Hellfest Open air Festival           | 2006       | France      | Europe        | Event park        | Rural   | Paid   | 420.000            | 7    | 60.000           | 2022      | Statista             |
| 41 | Ultra Korea                          | 2012       | South Korea | Asia          | Stadium           | Urban   | Paid   | 180.000            | 3    | 60.000           | 2018      | Namu Wiki            |
| 42 | World Club Dome                      | 2013       | Germany     | Europe        | Stadium           | Urban   | Paid   | 180.000            | 3    | 60.000           | 2023      | Farina               |
| 43 | Life is Beautiful Festival           | 2013       | USA         | North America | Event blocks      | Urban   | Paid   | 180.000            | 3    | 60.000           | 2021      | Sheckells            |
| 44 | British Summer Time (BST)            | 2013       | England     | Europe        | Park              | Urban   | Paid   | 530.000            | 9    | 58.889           | 2022      | Truly Experiences    |
| 45 | Nova Rock                            | 2005       | Austria     | Europe        | Field             | Urban   | Paid   | 225.000            | 4    | 56.250           | 2022      | Osman                |
| 46 | Ultra Music Festival (Ultra)         | 1999       | USA         | North America | Event park        | Urban   | Paid   | 165.000            | 3    | 55.000           | 2023      | Kassam               |
| 47 | Ultra Europe                         | 2013       | Croatia     | Europe        | Event park        | Urban   | Paid   | 160.000            | 3    | 53.333           | 2022      | Ultra Music Festival |
| 48 | Osheaga Music and Arts Festival      | 2006       | Canada      | North America | Event park        | Urban   | Paid   | 155.000            | 3    | 51.667           | 2023      | Carpenter            |
| 49 | Hot 97 Summer Jam                    | 1994       | USA         | North America | Stadium           | Urban   | Paid   | 51.301             | 1    | 51.301           | 2019      | Pollstar             |
| 50 | Airbeat One Festival                 | 2002       | Germany     | Europe        | Airfield          | Rural   | Paid   | 200.000            | 4    | 50.000           | 2022      | Lembke               |
| 51 | The Governors Ball Music Festival    | 2011       | USA         | North America | Island event park | Urban   | Paid   | 150.000            | 3    | 50.000           | 2016      | Statista             |
| 52 | Riot Fest                            | 2005       | USA         | North America | Park              | Urban   | Paid   | 150.000            | 3    | 50.000           | N/D       | Arline               |
| 53 | Rock en Seine                        | 2003       | France      | Europe        | Park              | Urban   | Paid   | 150.000            | 3    | 50.000           | 2022      | Statista             |
| 54 | Voodoo Music + Arts Experience       | 1999       | USA         | North America | Park              | Urban   | Paid   | 150.000            | 3    | 50.000           | 2016      | Spera                |
| 55 | Pentaport Rock Festival              | 2006       | South Korea | Asia          | Golf course       | Urban   | Paid   | 150.000            | 3    | 50.000           | 2023      | Korea Postsen        |
| 56 | EXIT                                 | 2000       | Serbia      | Europe        | Fortress          | Urban   | Paid   | 180.000            | 4    | 45.000           | 2021      | EXIT Fest            |
| 57 | Festival Internacional de Benicàssim | 1995       | Spain       | Europe        | Beach             | Urban   | Paid   | 180.000            | 4    | 45.000           | 2022      | Pitarch              |
| 58 | Wireless                             | 2005       | England     | Europe        | Park              | Urban   | Paid   | 135.000            | 3    | 45.000           | 2019      | Gottfried            |
| 59 | Djakarta Warehouse Project (DWP)     | 2008       | Indonesia   | Asia          | Convention center | Urban   | Paid   | 90.000             | 2    | 45.000           | 2016      | Bein                 |
| 60 | Mysteryland Music Festival           | 1993       | Netherlands | Europe        | Event park        | Urban   | Paid   | 133.000            | 3    | 44.333           | 2022      | Bakhuis              |
| 61 | Estereo Picnic                       | 2010       | Colombia    | South America | Golf course       | Urban   | Paid   | 173.000            | 4    | 43.250           | 2023      | Colectivo Sonoro     |
| 62 | Glastonbury Festival                 | 1970       | England     | Europe        | Farm              | Rural   | Paid   | 210.000            | 5    | 42.000           | 2022      | Malloy               |
| 63 | Sónar Festival                       | 1994       | Spain       | Europe        | Convention center | Urban   | Paid   | 122.664            | 3    | 40.888           | 2022      | Statista             |
| 64 | Welcome to Rockville                 | 2011       | USA         | North America | Racetrack         | Urban   | Paid   | 161.000            | 4    | 40.250           | 2021      | Abbott               |
| 65 | BottleRock Napa Valley               | 2013       | USA         | North America | Event park        | Urban   | Paid   | 120.000            | 3    | 40.000           | 2022      | Yu                   |
| 66 | Bilbao BBK Live                      | 2006       | Spain       | Europe        | Park              | Urban   | Paid   | 115.000            | 3    | 38.333           | 2022      | Crack Magazine       |
| 67 | Corona Capital Guadalajara           | 1981       | Mexico      | North America | Racetrack         | Urban   | Paid   | 72.669             | 2    | 36.335           | 2022      | Vazquez              |
| 68 | Bourbon and Beyond                   | 2017       | USA         | North America | Event park        | Urban   | Paid   | 140.000            | 4    | 35.000           | 2022      | The Bourbon Flight   |

| Nº  | Event name                  | First year | Country        | Continent     | Location          | Context | Access      | Average attendance | Days | Daily attendance | Ref. year | References           |
|-----|-----------------------------|------------|----------------|---------------|-------------------|---------|-------------|--------------------|------|------------------|-----------|----------------------|
| 69  | Reading Festival            | 1999       | England        | Europe        | Farm              | Urban   | Paid        | 105.000            | 3    | 35.000           | 2019      | Walker               |
| 70  | Baja Beach Festival         | 2018       | Mexico         | North America | Beach             | Urban   | Paid        | 105.000            | 3    | 35.000           | 2021      | Varga                |
| 71  | Afropunk                    | 2005       | USA            | North America | Park              | Urban   | Paid        | 70.000             | 2    | 35.000           | N/D       | Issuu                |
| 72  | Balaton Sound               | 2007       | Hungary        | Europe        | Park              | Urban   | Paid        | 172.000            | 5    | 34.400           | 2019      | Hungary Today        |
| 73  | Download Festival England   | 2003       | England        | Europe        | Hippodrome        | Rural   | Paid        | 100.000            | 3    | 33.333           | 2019      | Mansfield            |
| 74  | Eletric Zoo                 | 2009       | USA            | North America | Event park        | Urban   | Paid        | 100.000            | 3    | 33.333           | 2022      | Cruise America       |
| 75  | Les Eurockéennes            | 1989       | France         | Europe        | Park              | Urban   | Paid        | 125.000            | 4    | 31.250           | 2023      | Les Eurock Eennes    |
| 76  | Boardmasters Festival       | 1981       | England        | Europe        | Beach             | Urban   | Free + paid | 150.000            | 5    | 30.000           | N/D       | Visionnine Group     |
| 77  | Ultra Japan                 | 2014       | Japan          | Asia          | Event park        | Urban   | Paid        | 90.000             | 3    | 30.000           | 2015      | Ultra Music Festival |
| 78  | Ultra Brazil                | 2008       | Brazil         | South America | Stadium           | Urban   | Paid        | 90.000             | 3    | 30.000           | 2017      | Barbosa              |
| 79  | Roots Picnic                | 2008       | USA            | North America | Park              | Urban   | Paid        | 90.000             | 3    | 30.000           | 2023      | Jackson              |
| 80  | Clockenflap                 | 2008       | China          | Asia          | Event park        | Urban   | Paid        | 87.000             | 3    | 29.000           | 2023      | Ramanathan           |
| 81  | Fuji Rock                   | 1997       | Japan          | Asia          | Ski resort        | Rural   | Paid        | 114.000            | 4    | 28.500           | 2023      | Fuji Rock Festival   |
| 82  | South by Southwest (SXSW)   | 1987       | USA            | North America | Convention center | Urban   | Free + paid | 278.681            | 10   | 27.868           | 2022      | Explore SXSW         |
| 83  | Open'er Festival            | 2002       | Poland         | Europe        | Airfield          | Urban   | Paid        | 110.000            | 4    | 27.500           | 2019      | Open'er              |
| 84  | Defqon.1 Weekend Festival   | 2003       | Netherlands    | Europe        | Park              | Urban   | Paid        | 100.000            | 4    | 25.000           | 2023      | FlevoPost            |
| 85  | Ultra South Africa          | 2014       | South Africa   | Africa        | Convention center | Urban   | Paid        | 50.000             | 2    | 25.000           | 2020      | Ultra Music Festival |
| 86  | Best Kept Secret            | 2013       | Netherlands    | Europe        | Park              | Rural   | Paid        | 72.000             | 3    | 24.000           | 2022      | Odido                |
| 87  | Eletric Picnic              | 2004       | Ireland        | Europe        | Farm              | Rural   | Paid        | 70.000             | 3    | 23.333           | 2019      | Power                |
| 88  | Lollapalooza Stockholm      | 2019       | Sweden         | Europe        | Park              | Urban   | Paid        | 70.000             | 3    | 23.333           | 2022      | Kihlström            |
| 89  | Rock am Ring                | 1985       | Germany        | Europe        | Hippodrome        | Rural   | Paid        | 70.000             | 3    | 23.333           | 2023      | Deutschlandfunk      |
| 90  | Rock im Park                | 1993       | Germany        | Europe        | Hippodrome        | Rural   | Paid        | 70.000             | 3    | 23.333           | 2023      | BR 24                |
| 91  | Rolling Loud Music Festival | 2015       | USA            | North America | Event park        | Urban   | Paid        | 70.000             | 3    | 23.333           | 2023      | Lyons et al.         |
| 92  | Let it roll                 | 2002       | Czech Republic | Europe        | Airfield          | Rural   | Paid        | 69.000             | 3    | 23.000           | N/D       | Rove me              |
| 93  | Bonnaroo Music Festival     | 2002       | USA            | North America | Field             | Rural   | Paid        | 85.000             | 4    | 21.250           | 2023      | Lunsford and Leyva   |
| 94  | Nuit Sonores                | 2003       | France         | Europe        | Around the city   | Urban   | Paid        | 102.000            | 5    | 20.400           | 2023      | Tribune de Lyon      |
| 95  | Distortion                  | 1998       | Denmark        | Europe        | Event blocks      | Urban   | Free + paid | 100.000            | 5    | 20.000           | 2022      | Nørgaard             |
| 96  | Day N Vegas                 | 2019       | USA            | North America | Open-air venue    | Urban   | Paid        | 60.000             | 3    | 20.000           | 2021      | Lindsey              |
| 97  | Ultra Australia             | 2018       | Australia      | Oceania       | Event park        | Urban   | Paid        | 40.000             | 2    | 20.000           | 2019      | The Music Network    |
| 98  | Pitchfork Music Festival    | 2006       | USA            | North America | Park              | Urban   | Paid        | 60.000             | 3    | 20.000           | 2023      | Fifty Grande         |
| 99  | Sydney Festival             | 1956       | Australia      | Oceania       | Around the city   | Urban   | Free + paid | 420.000            | 24   | 17.500           | 2023      | Ansell               |
| 100 | Vive Latino                 | 1998       | Mexico         | North America | Racetrack         | Urban   | Paid        | 35.000             | 2    | 17.500           | 2022      | Monserat             |
| 101 | Moonrise                    | 2004       | USA            | North America | Hippodrome        | Urban   | Paid        | 35.000             | 2    | 17.500           | 2022      | Levy                 |
| 102 | Creamfields North / South   | 1998       | England        | Europe        | Around the city   | Urban   | Paid        | 69.000             | 4    | 17.250           | 2022      | Osborne              |

| N°  | Event name                     | First year | Country      | Continent     | Location          | Con-text | Access      | Average attendance | Days | Daily attendance | Ref. year | References                |
|-----|--------------------------------|------------|--------------|---------------|-------------------|----------|-------------|--------------------|------|------------------|-----------|---------------------------|
| 103 | Montreux Jazz Festival         | 1967       | Switzerland  | Europe        | Convention center | Urban    | Free + paid | 250.000            | 15   | 16.667           | 2022      | Montreux Jazz Festival    |
| 104 | Splendour in the grass         | 2001       | Australia    | Oceania       | Field             | Rural    | Paid        | 50.000             | 3    | 16.667           | 2022      | Nickel and Ferri          |
| 105 | Something in the water         | 2019       | USA          | North America | Beach             | Urban    | Paid        | 50.000             | 3    | 16.667           | 2022      | Complex                   |
| 106 | Rampage                        | 2009       | Belgium      | Europe        | Field             | Urban    | Paid        | 50.000             | 3    | 16.667           | 2023      | Mariotti                  |
| 107 | Tuska Open Air Metal Festival  | 1998       | Finland      | Europe        | Event park        | Urban    | Paid        | 49.000             | 3    | 16.333           | 2022      | Tuska                     |
| 108 | Roskilde                       | 1971       | Denmark      | Europe        | Around the city   | Urban    | Paid        | 130.000            | 8    | 16.250           | 2023      | Roskilde Festival         |
| 109 | Wacken Open Air                | 1990       | Germany      | Europe        | Field             | Rural    | Paid        | 61.000             | 4    | 15.250           | 2023      | ZDF                       |
| 110 | Ohana Fest                     | 2016       | USA          | North America | Beach             | Urban    | Paid        | 45.000             | 3    | 15.000           | 2022      | Fadroski                  |
| 111 | Isle of Wight Festival         | 1968       | England      | Europe        | Park              | Urban    | Paid        | 55.000             | 4    | 13.750           | 2023      | Isle of Wight Guru        |
| 112 | DGTL                           | 2013       | Netherlands  | Europe        | Event park        | Urban    | Paid        | 40.000             | 3    | 13.333           | N/D       | Metabolic                 |
| 113 | Boston Calling                 | 2013       | USA          | North America | Event park        | Urban    | Paid        | 40.000             | 3    | 13.333           | 2017      | Buchman                   |
| 114 | Hangout Music Festival         | 2010       | USA          | North America | Beach             | Urban    | Paid        | 40.000             | 3    | 13.333           | 2023      | Fifty Grande              |
| 115 | Afro Nation Portugal           | 2019       | Portugal     | Europe        | Beach             | Urban    | Paid        | 40.000             | 3    | 13.333           | 2023      | Expresso 50               |
| 116 | Firefly Music Festival         | 2012       | USA          | North America | Racetrack         | Urban    | Paid        | 50.000             | 4    | 12.500           | 2021      | Mancini                   |
| 117 | Eletric Forest Festival        | 2011       | USA          | North America | Park              | Rural    | Paid        | 50.000             | 4    | 12.500           | 2023      | Bissell                   |
| 118 | Rolling Loud Portugal          | 2021       | Portugal     | Europe        | Beach             | Urban    | Paid        | 35.000             | 3    | 11.667           | 2022      | JN                        |
| 119 | TimeWarp                       | 1994       | Germany      | Europe        | Convention center | Urban    | Paid        | 22.000             | 2    | 11.000           | 2023      | SWR                       |
| 120 | Dekmantel Festival             | 2013       | Netherlands  | Europe        | Park              | Urban    | Paid        | 30.000             | 3    | 10.000           | 2017      | Goulding                  |
| 121 | Desert Daze                    | 2012       | USA          | North America | Field             | Urban    | Paid        | 30.000             | 3    | 10.000           | N/D       | WAV                       |
| 122 | Newport Folk Festival          | 1959       | USA          | North America | Park              | Urban    | Paid        | 30.000             | 3    | 10.000           | 2023      | Bowker                    |
| 123 | Burning Man                    | 1986       | USA          | North America | Desert            | Desert   | Paid        | 80.000             | 9    | 8.889            | 2022      | Hefflersep                |
| 124 | Afro Nation                    | 2019       | Ghana        | Africa        | Beach             | Urban    | Paid        | 15.000             | 2    | 7.500            | 2022      | Barnes                    |
| 125 | Float Fest                     | 2014       | USA          | North America | Farm              | Rural    | Paid        | 15.000             | 2    | 7.500            | 2022      | Epps                      |
| 126 | Ill Points Festival            | 2013       | USA          | North America | Convention center | Urban    | Paid        | 14.000             | 2    | 7.000            | 2022      | Viberate                  |
| 127 | Green Man Festival             | 2003       | Wales        | Europe        | Field             | Rural    | Paid        | 25.000             | 4    | 6.250            | N/D       | National Today            |
| 128 | Suwannee Hulaween              | 2013       | USA          | North America | Park              | Rural    | Paid        | 20.000             | 4    | 5.000            | 2022      | Compose Yourself Mag.     |
| 129 | Calvi on the Rocks             | 2003       | France       | Europe        | Beach             | Urban    | Paid        | 15.000             | 4    | 3.750            | N/D       | Pacelli                   |
| 130 | Rocking the Daisies            | 2006       | South Africa | Africa        | Event park        | Rural    | Paid        | 10.000             | 3    | 3.333            | 2022      | South Africa Venues       |
| 131 | Tomorrowland Winter            | 2019       | France       | Europe        | Ski resort        | Rural    | Paid        | 22.000             | 8    | 2.750            | 2023      | Tomorrowland              |
| 132 | Telluride Bluegrass            | 1974       | USA          | North America | Field             | Rural    | Paid        | 10.000             | 4    | 2.500            | N/D       | O'Neil                    |
| 133 | Snowbombing                    | 2000       | Austria      | Europe        | Ski resort        | Rural    | Paid        | 6.000              | 5    | 1.200            | N/D       | Snowbombing Festival      |
| 134 | Dimension Festival             | 2012       | Croatia      | Europe        | Fortress          | Urban    | Paid        | 5.000              | 5    | 1.000            | N/D       | Glasgow University        |
| 135 | Meadows in the Mountains       | 2013       | Bulgaria     | Europe        | Field             | Rural    | Paid        | 4.000              | 4    | 1.000            | 2020      | Gaidarova                 |
| ??? | Festival d'été de Québec (FEQ) | 1968       | Canada       | North America | Park              | Urban    | Paid        | N/D                | 11   | ????             | N/D       | Porter, Journal de Québec |



## **Annex E: Survey response: Street Parade**

### **1. In general, can we consider that Street Parade demonstrates concern for sustainability issues?**

Of course. We do everything possible to make the event as sustainable as possible.

### **2. Are there any sustainability goals to be achieved? If so, what are they?**

The Street Parade takes place on the streets of Zurich, on public land. We work very closely with the Zurich authorities. We are working together to achieve sustainable goals

### **3. Is data collected on energy consumption, CO<sub>2</sub> emissions, or waste generation? Which of these?**

This is not possible at Street Parade, because we do not know how many visitors are present, from where exactly they come and with which means of transport they arrive.

### **4. Does Street Parade develop a sustainability report? If so, is the report made available to the public? How can the public access this document?**

Yes we have certain reports, which we then investigate and discuss with the Zurich authorities. Meaningful additions and new measures will be included in the planning of the upcoming Street.

### **5. Does Street Parade take place in a location with good mobility and public transportation options? What is the main means of transportation used to get to the event?**

Yes, it takes place in the city of Zurich. The main means of transport is certainly the train/subway

### **6. Are there any actions taken to reduce the environmental impacts of transportation used within the event (mobility of artists, products, and services)?**

In stage construction, we integrate materials from Swiss cultivation or production. For example, one stage was completely built with storm wood from local forests.

### **7. Is data collected on the impacts on the surrounding area during the festival (congestion, noise, safety, local economy, etc.)?**

The university has published a study on the economics of the Street Parade versus the city of Zurich, Switzerland.

### **8. During periods when Street Parade does not occur, is the space used for other purposes? Is it used by the community living in the surrounding area?**

Yes, many events are held in the squares throughout the year (city festival, Sechseläuten, circus, Christmas markets...).

**9. In the last editions, were measures taken that benefited sustainability issues? What were they? Was the effectiveness of these actions evaluated?**

Every year the concept is completed and refined.

**10. Is there direct communication with the public, through campaigns and social media, that promotes environmental awareness?**

Yes, on all our channels

**11. How is sustainability encouraged and developed in Street Parade?**

Together with our partners, we have been committed to sustainable processes for years and refine the concepts every year to ensure that the environmental impact of Switzerland's biggest event remains as low as possible.

## **Annex F: Survey response: Lollapalooza Chile**

### **1. In general, can we consider that Lollapalooza demonstrates concern for sustainability issues?**

Of course, starting from our website and networks, first point of contact with our fans, we state every year our commitment with sustainability , inclusion and environmental actions.

### **2. Are there any sustainability goals to be achieved? If so, what are they?**

\* Reduce single use plastic use

\* Grant the circularity of all materials inlet @the festival - working on best options

\* For 3 years in a row our Aldea Verde Stage was powered with solar energy with more than 200 solar panels

\* Education is a pillar for us, each year we make a call to more than 650 volunteers, 400 of them are for our program Rock and Recycle

\* for 10th year we calculated and neutralized CO<sub>2</sub> emissions

### **3. Is data collected on energy consumption, CO<sub>2</sub> emissions, or waste generation? Which of these?**

We quantify 360\* emissions of our festival, it includes energy, waste, water, transportation, food, and all GHG emissions

### **4. Does Lollapalooza develop a sustainability report? If so, is the report made available to the public? How can the public access this document?**

Yes we do, it will soon be available on our LOTUS website.

### **5. Does Lollapalooza take place in a location with good mobility and public transportation options? What is the main means of transportation used to get to the event?**

Since 2022 we're in a new location, public can access with public buses, there's a metro station at a few blocks from the park and we negotiate special fees with car sharing or uber/cabify companies

### **6. Are there any actions taken to reduce the environmental impacts of transportation used within the event (mobility of artists, products, and services)?**

Internally we use bikes, electric vehicles (the venue is 2 km long and we stay there 1 month)

We're willing to change official transportation for artists to electric-vans (international artists)

we push hard on communication suggesting shared and optimized cargo transportation for national artists

### **7. Is data collected on the impacts on the surrounding area during the festival (traffic jam, noise, safety, local economy, etc.)?**

We did it 1 year, facing the change of venue. This year we organized meetings with neighbours and local entrepreneurs together with a specific 'technical' meeting with the Municipality

**8. During periods when Lollapalooza does not occur, is the space used for other purposes? Is it used by the community living in the surrounding area?**

The park is not very welcoming, the main issue is the lack of green areas and shadows there so it's used only by few population off season.

The municipality is willing to host further events. This year the venue will be transformed into the Panamerican Village - for 2023 Nov. Panamerican Games (Rio de Janeiro with Rock in Rio could be a good example)

**9. In the last editions, were measures taken that benefited sustainability issues? What were they? Was the effectiveness of these actions evaluated?**

Yes, we suggest an efficient set up and use of diesel generators.

we limit the sale/use of 0.5lt plastic bottle providing free water stations and granting the use of re-usable bottles.

Some materials are forbidden (we have a strict manual for suppliers and sponsors)

We launched a Recycling contest before the Festival and were able to recycle 6 tons of different types of materials

2nd year that we treat organic waste

All these campaigns are regulated and quantified year by year aiming to a 'zero waste to landfill' Lollapalooza

**10. Is there direct communication with the public, through campaigns and social media, that promotes environmental awareness?**

Yes, we do have a specific comms and mkt campaign about our sustainability program.

**11. How is sustainability encouraged and developed in Lollapalooza?**

We push previous communication, link with fans with contests and prizes. During the Festival we have an Area called Aldea Verde which aim is to promote sustainability showing great ideas/ works of art and innovation. It's a call to action, to get involved in specific conservation campaigns / being a connected and conscious human being

## **Annex G: Survey response: Pol'and'Rock**

Unfortunately, due to our tight schedule and limited resources in the pre-festival months, we will not be able to provide you with all the answers. I will do my best to present you with some of the fundamental eco-solutions we use at Pol'and'Rock Festival and strongly encourage you to follow our websites for any updates on the subject. In 2018 Pol'and'Rock Festival initiated the Eco Initiative called "Zaraz Będzie Czysto" [Eng. "It's about to be clean"] with the aim not only to clean up the festival grounds, but also to raise awareness among festivalgoers about environmental protection. The news concerning our Eco Initiative spread like wildfire on social media, reaching 94% of all festival attendees. It demonstrated how deeply rooted the care for the natural environment is in the hearts of our Most Beautiful Audience in the World. In 2019, we made further advancements by installing 157 waste disposal spots across the festival grounds. Each zone, from waste segregation points to the PreZero area and Lubuskie Voivodeship zone, had designated spots where festivalgoers could dispose of their rubbish. During the 27th Pol'and'Rock Festival in 2021, each festivalgoer received a special green rubbish bag to fully engage in the eco revolution. The 28th Pol'and'Rock Festival took the "It's about to be clean" initiative to another level, with a remarkable 308,900 kg of waste removed from the festival grounds. This year, traditionally, we hold a fundraiser to collect money for cleaning the festival field (Pol'and'Rock Festival is a free, unticketed event and all the contributions are voluntary). Our objective is to raise a total of PLN 80,000. Last year, our goal was to collect PLN 40,800, and we exceeded it by raising 128% of the target amount. We do our best to educate our festivalgoers about limiting the environmental footprint and implementing eco-friendly solutions. Together with our partners, we encourage festivalgoers to choose re-usable RPET mugs, save water, and segregate rubbish for further recycling. At our festival shopping centre there are also no plastic bags allowed. Furthermore, we promote the collective transport. Before the Festival starts, we launch an online platform called "Travel Bank" where festivalgoers may search for transport to and from the Festival and meet travel companions. Annually, we team up with the Polish train provider to ensure extra PKP train connections in the regular timetable. Last but not least, we promote eco-friendly approach by hosting workshops and panel discussions on ecology at the Academy of the Finest of Arts - our hub for learning and cultural exchanges.







2023

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