

The image features a circular opening in a modern building's facade, revealing a lush green wall. The building's architecture is characterized by a grid of light-colored tiles and curved, overlapping panels. The AGF logo is prominently displayed in the center of the green wall.

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**AGF Festival Carbon Footprint Report  
2022 / 2023**

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**TRAINING | CONSULTANCY | CERTIFICATION | CO2 ANALYSIS | NET ZERO STRATEGY**

## EXECUTIVE SUMMARY: FESTIVAL CARBON FOOTPRINT REPORT 2022 - 2023

Festivals play an important role within the cultural sector, providing a space for leisure, creative experiences, nurturing talent, and cultural innovation. As with any event requiring significant movements of people, logistics and resources, they also have an environmental impact. Quantifying carbon emissions is one of the tools necessary to assess the environmental impact of an event, and inform decisions and appropriate actions.

Festival sector carbon analysis reports over the last 10-15 years predominantly highlighted the impact of audience travel, with reports typically considering that over 80% of festival emissions come from travel<sup>12</sup>. Many of these studies have tended to focus on limited emissions sources, often excluding those associated with food & drink consumed, production materials, merchandise, or wider production freight and supplier transportation to the event.

However this is changing. More festivals are taking sustainable and environmental action, and capturing data to monitor their impact. Recent data collected by AGF from European and UK festivals indicates that when considering more complete Scope 3 emissions, audience transport, whilst still the largest single contributor, may not represent 80% of emissions. Rather, we have found it is responsible on average for closer to 41% of the total footprint (with variations between events, depending on scale and location). Food and drink related emissions, artist transport and accommodation, resource use and other supplier and trader travel make up the other largest emissions sources with more than half of the footprint.

While reducing the impact of audience travel remains important, this report highlights other key areas of action which are within the event's control to reduce festival carbon emissions on site and across the supply chain. This includes food and drink sold, collaborations and partnerships with agents, artists and other promoters to minimise touring impacts, or working with suppliers to utilise low-impact materials and circular services.

This analysis is based on detailed festival carbon footprints completed by AGF, as well as A Greener Festival certification applicant data from 2022 and 2023, and publicly available sustainability reports. As sustainability awareness grows across the sector and festivals continue to improve their data collection processes, it is expected that these figures will become more accurate over time.

Finally, we note that carbon footprints are a useful metric to assess impact of Greenhouse Gas emissions, but limited when considering wider impacts such as resource depletion, noise pollution, land use, air and water pollution, etc. Incorporating biodiversity assessments and Net Positive strategies at the core of the event's ethos is essential and must be encouraged.

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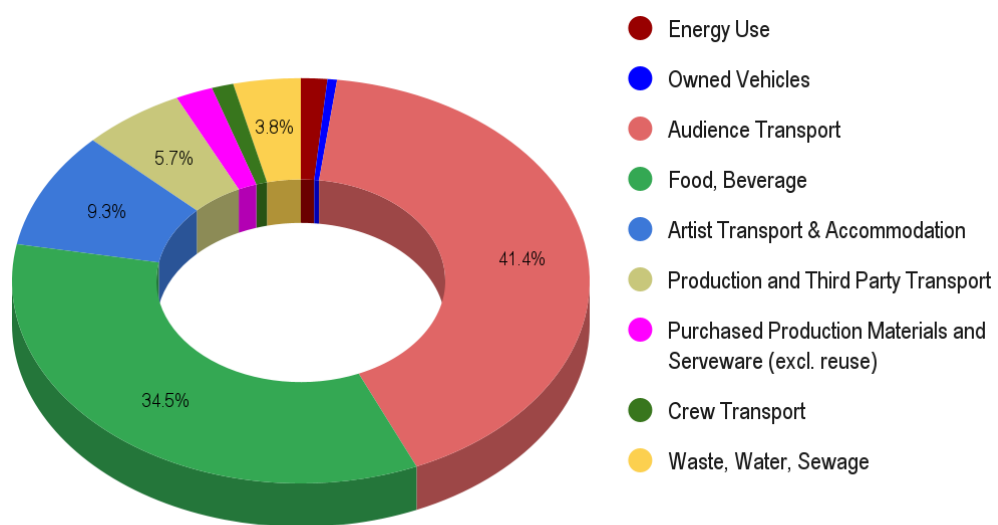
<sup>1</sup> [Field of Green - towards sustainable Scottish music festivals](#) .

<sup>2</sup> <https://yousmartthing.com/sectors/private/festivals/>

## RESULTS

The average breakdown of emissions for Outdoor European and UK festivals is detailed in Figure 1. The festivals included within the aggregates are all outdoor events, taking place either within urban environments (i.e. city parks) or greenfield environments (fields, parks located outside of urban areas).

Figure 1: European & UK Festivals Average Emissions Breakdown

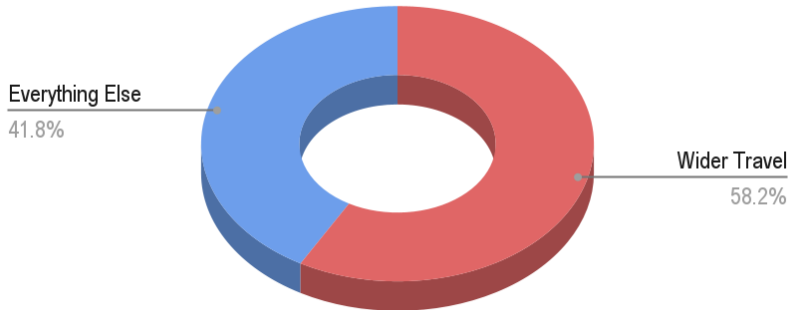


The largest emissions source comes from the travel of attendees to the event. However, this emission source represents on average 41% of an event’s footprint when other Scope 3 emissions are also included. When accounting for all mobility emissions<sup>3</sup>, this increases to on average 58% of an event’s total carbon footprint.

Artist travel related emissions make up nearly 10%, while the emissions associated with wider supply chain transport (including trader, contractors, etc) represent over 5% of the average footprint. Engagement with the event’s supply chain to increase local suppliers or low-emissions trucking, and implementing line-ups with majority local or national talent were found to minimise these emissions.

<sup>3</sup> Audience travel, artist travel, production, supplier and trader travel.

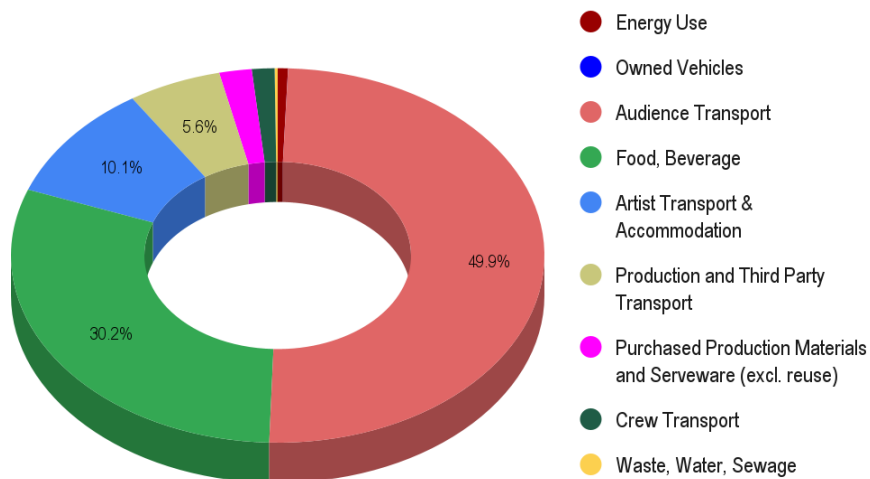
Figure 2: European & UK Festivals Wider Travel-Related Emissions



For UK festivals specifically, the data collected indicates that rather than representing 80% of emissions as referred to in the House of Commons “Future of Music Festivals” report, the average travel share appears closer to 67%.

It is important to note that these results are averages, and event-specific emissions vary. Within the data analysed by AGF, audience travel emissions varied between 18% of total footprint to 76% of the total footprint<sup>4</sup>, based on the location, scale, and nature of the events<sup>5</sup>. Access to public transport or high percentages of local attendees were seen to minimise the share of audience travel emissions, while limited communal transport options or international audiences had the opposite effect.

Figure 3: UK-Based Festivals Emission Breakdown



<sup>4</sup> When including all scopes listed in the methodology.

<sup>5</sup> AGF was not able to verify the methodologies for those events who provided publicly available carbon footprint reports.

## Food, Beverages, and Materials

The production and consumption of food and beverages was the second largest emissions source, representing 34% of the average footprint. This is greatly influenced by the types of menu items sold (such as meat or plant-based) and the quantity of beverages sold at the events. Festivals who have implemented vegetarian or plant-based policies have typically seen a reduction in food-related emissions<sup>6</sup>.

The emissions relating to new purchased materials make up a relatively small percentage of the overall footprints analysed, or just over 2% of emissions. Most of the festivals analysed rent or lease stage materials or equipment, and increasingly incorporate reusable items for scenography, decor, and serveware<sup>7</sup>. This report did not include the embodied emissions with rented or leased materials.

There remains a lack of accurate data on quantities and types of new materials purchased, including event merchandise and promotional items, the inclusion of which would likely increase the overall footprint.

Waste and sewage treatment and water use represent a small percentage of the average emissions (4%). This is due to a largely decarbonised water supply system, high use of Energy from Waste treatment rather than landfill, and generally high recycling rates within the festivals analysed. These emissions will likely be higher in regions or areas where energy recovery waste treatments are not available and where recycling and circular material use is limited.

## Energy Use

Within this analysis, energy use (in particular fuel use) contributed on average under 2% of emissions. This may be an under-representation of the wider sector, as AGF data is based on events who have already made significant efforts to improve energy efficiency, use grid electricity, onsite renewables, or low emission fuels and biofuels<sup>8</sup>.

If all events reviewed by AGF which used Biodiesel fuel (Hydrotreated Vegetable Oil HVO) for generators had instead used diesel (Figure 4), the average energy Scope 1 emissions would increase over 300%, from 1.4% to over 5% of the total footprint.

However, we note that biofuels (HVO) still release particulate matter and emissions at point of burning, and while preferable to fossil fuels, should be seen as a step within the wider goal to achieve 100% grid electricity or renewable energy use.

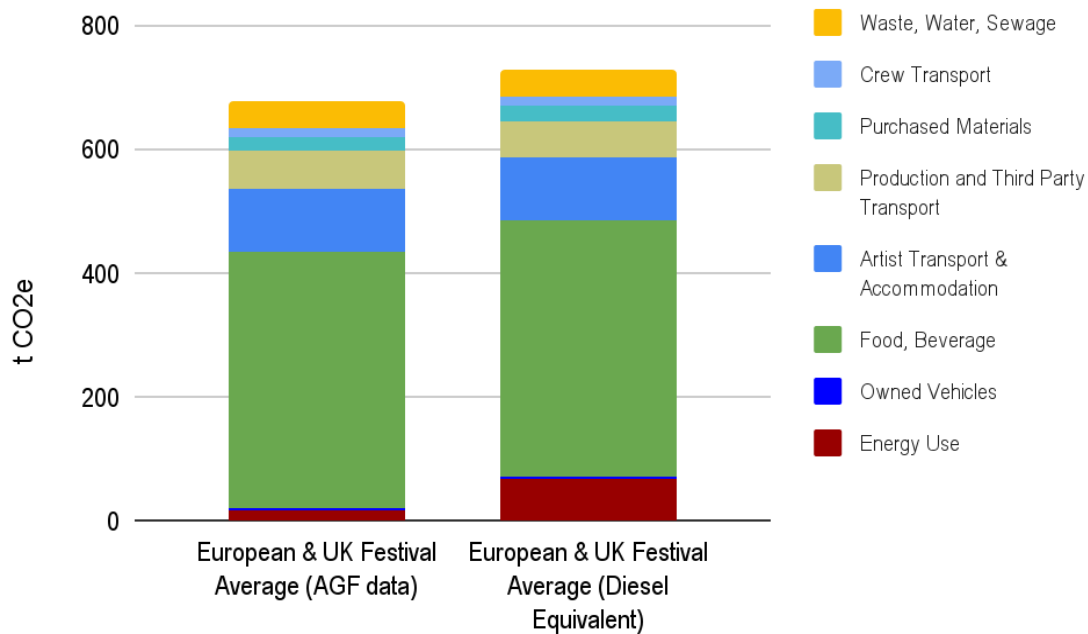
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<sup>6</sup> Removing meat was found to significantly reduce the average food-related emissions per person (in one instance by up to a third).

<sup>7</sup> AGF methodology does not account for production-related emissions of rented or reused items, due to limitations in assigning emissions per use.

<sup>8</sup> AGF analysis follows the GHG Protocol Standard. Festival carbon footprints exclude Out of Scope emissions for Biofuels (i.e. emissions considered to have been absorbed during the growth phase of the biogenic material). However, Out of Scope emissions are always highlighted within individual reports.

Figure 4: Comparison of alternative fuel use and diesel use



### Camping vs Non-Camping Events

Unsurprisingly, the analysis found resource consumption and associated emissions to be higher at camping events. This is consistent with other studies and reports showing camping events to have higher water use, waste, and food and drink consumption than non-camping ones. Average emissions associated with waste generation, water use, food and drink consumption effectively double at camping events. For non-camping events, these impacts would be deflected to hotels, homes or other accommodation and restaurants for example.

Production and artist transport to site also increased, and average energy use emissions were three times higher than urban non-camping events, which are more likely to have access to grid electricity.

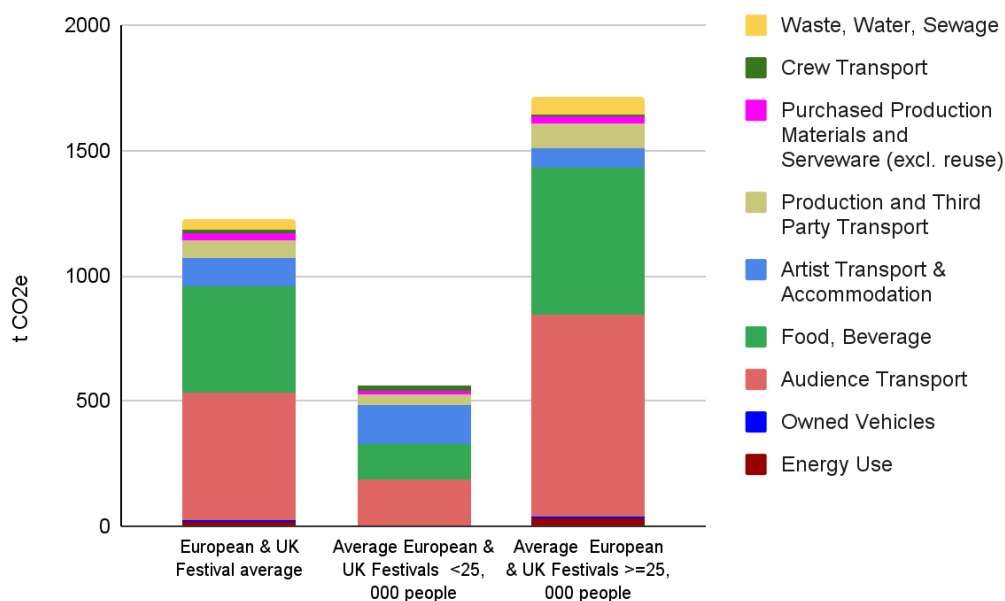
Differences in attendee travel emissions between camping and non-camping events were found to be more varied. While rural camping events require travel to sites which may be more remote, visitors are less likely to travel during the event. Non-camping urban events generally have greater access to public transport and proximity to potential audiences, but also have a higher proportion of day-visits, which can increase average travel emissions.

This report also highlights data gathering limitations for these events: attendees often combine travel to urban festivals or international events with a wider holiday or trip to that city or country. Further work is required to better differentiate or assign ownership of such travel emissions.

## Impact of Size and Capacity

There is also a significant disparity between smaller festivals, and larger events, as illustrated in Figure 5. The analysis differentiated between festivals which have a capacity of less than 25,000<sup>9</sup>, and those with a capacity equal to or over 25,000. The increase in emissions for larger events appears to be proportional with those audience-facing emissions sources - such as audience travel, food and drink consumed, waste, water and sewage. Production, supplier and trader travel emissions also increase noticeably for larger events.

Figure 5: European & UK Festival Emissions Breakdown by Size (average daily capacity)



The prime outlier within our analysis related to crew and staff travel, with smaller festivals having much higher recorded crew travel emissions than larger festivals. Initial insight appears to indicate that larger events face greater difficulties in capturing this data.

## European and UK Emissions Per Person

Based on the data analysed, average carbon footprint per person per day (pppd) was 11 kg CO<sub>2</sub>e when including all scopes. Within the events reviewed by AGF, there remains a significant disparity depending on type, location, and scale of the festivals - with a minimum recorded of 4.9 kgCO<sub>2</sub>e pppd to a maximum recorded of 30 kgCO<sub>2</sub>e pppd<sup>10</sup>.

<sup>9</sup> Those included within the capacity group below 25,000 had an average daily capacity of 14,100. Those included within the capacity group equal to or greater than 25,000 had an average daily capacity of 46,700.

<sup>10</sup> These averages do not account for any offsets or carbon removals for which the events may have invested in to mitigate their impact

Previous reports and studies have estimated the emissions per person per day to range between 1.9 kgCO<sub>2</sub>e to 5 kg CO<sub>2</sub>e<sup>11</sup> when including minimal emissions sources, and between 10 kgCO<sub>2</sub>e and 25 kgCO<sub>2</sub>e<sup>12</sup> when including more complete sources of emissions.

While this updated average is an increase from previously reported estimates, it remains lower than the average daily emissions per household. In effect, the average footprint of a UK resident is approximately 19.5 kg CO<sub>2</sub>e per day<sup>13</sup>, while the average European household emissions are around 21.3 kg CO<sub>2</sub>e per day.

Nevertheless, as wider Net Zero targets are implemented at national level, the average emissions per household are expected to decrease, and the event sector will need to follow suit.

## Conclusion

Audience travel remains the largest contributor to a festival's carbon footprint, but our analysis has shown that when including the other emissions sources, audience travel represents on average approximately 41% of emissions. When considering wider travel (including artists, traders, etc), transport emissions increase to around 58% on average.

Food and drink sold at the event was found to be the second largest contributor with more than a third of emissions. Artist transport and accommodation, as well as supplier and trader transport are significant contributors to the footprint but these have previously often been left out due to lack of data or uncertainty and variability of conversion factors.

Therefore while increasing low-carbon audience travel to events must remain a priority, this report highlights there are wider opportunities festival organisers can target to reduce their impact where they have more control. Decisions as planning and design stage regarding food and drink choices<sup>14</sup>, artist booking, trader selection, procurement and material selection, sponsor choice, etc.. can significantly reduce an event's footprint.

Furthermore, as more organisations look towards apportioning carbon impacts between stakeholders and supply chain, and attain Net Zero through carbon removals, a nuanced understanding of the emissions becomes crucial, and as well as an economic consideration.

This analysis has also found an average footprint per festival attendee per day of 11 kg CO<sub>2</sub>e, although the impact of an event is highly site-specific. This average remains lower than the average daily footprint of a person in Europe and the UK, but as countries reduce their overall emissions as part of Net Zero targets, the events industry will need to follow suit.

Findings in this report complement those on the impact of Music Festival published by Music Declares Emergency Switzerland, which calculated an average footprint per person

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<sup>11</sup> <https://travelandclimate.org/climate-footprint-activities>

<sup>12</sup> [CEPSA how to reduce the emissions associated with concerts, tours and music festivals](#)

<sup>13</sup> [ONS Comparing greenhouse gas emissions UK and European countries 2020](#)

<sup>14</sup> Removing meat was found to significantly reduce the average food-related emissions per person (in one instance by up to a third)



of 8.8kg CO<sub>2</sub>e. The MDE report similarly found that wider travel emissions<sup>15</sup> represented 67% of an event's footprint<sup>16</sup>, rather than the often quoted 80% or more.

It is noted that further work is required within the sector on standardising how travel emissions for multiple purposes (i.e. urban festivals mixed with wider visits) are accounted for, and to clarify ownership of emissions (i.e. artist tours, equipment rental, production transport between events). In addition, as festivals improve their data collection capabilities, the averages outlined in this report are likely to evolve as more data becomes available.

Finally, carbon footprints are a useful indicator of an event's contribution to climate change and in some cases to wider impacts such as biodiversity decline and pollution impacts. However, we acknowledge that they do not give a detailed account of direct environmental impacts such as light, noise pollution, or habitat disruption; nor wider indirect impacts such as land and water pollution, resource depletion, or deforestation within a supply chain. Identifying and mitigating these wider impacts require biodiversity and environmental assessments, and are examined in more detail within the AGF Assessment Framework and Certification process.

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<sup>15</sup> including audience and artist travel

<sup>16</sup> [https://musicdeclares.net/assets/images/media/MDE\\_Website\\_Studie.pdf](https://musicdeclares.net/assets/images/media/MDE_Website_Studie.pdf)

## METHODOLOGY

The carbon emission averages have been developed using information from 16 festivals collected by AGF carbon footprint analysis or AGF certification in 2022/2023. Additional carbon emissions data was included from 2 non-AGF assessed festivals who have made their self-reported 2022 carbon footprints publicly available.

The analysis included information from:

- 8 Outdoor festivals with a capacity below 25,000 people per day
- 9 Outdoor festivals with a capacity equal to or over 25,000 people per day.
- 11 of the Outdoor festivals are located in Europe
- 6 of the Outdoor UK festivals are based in the UK.

This data was collected from events which have implemented significant sustainability measures and therefore these averages are likely to be conservative estimates. Festivals which are not investing into reducing their impact likely have higher carbon footprints.

The festivals included within the aggregates are all outdoor events, taking place either within urban environments (i.e. city parks) or greenfield environments (fields, parks located outside of urban areas).

The carbon footprints developed by AGF follow the GHG Protocol Reporting Standard and ISO 14064:1, and consider emissions sources resulting from the following:

Scope	Scope 1	Scope 2	Scope 3
<b>Activity Name</b>	-Static Fuel Use (generators, special effect gas, ...)  -Owned or Leased Mobile Fuel Use and Vehicles	-Electricity Use	-Audience Travel -Artist Travel and Accommodation -Production and Third Party Travel -Staff and Crew Travel -Food & Drink -Purchased Materials and Supplies incl. Serveware -Waste -Water Use and Wastewater

From the initial 33 festival datasets available to AGF, 18 were excluded from the averages where the emissions data provided by the event was considered too incomplete - especially if audience travel data and food data was not available.

Only emissions associated with the production and purchase of new materials, supplies and equipment have been included. Embodied emissions relating to the production of hired and leased stage and production materials were not accounted for.



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