Galicia Design Week 2020

CO2 Analysis Report

AGF

Galicia Design Week 2020 - CO2 Analysis Report

Carbon Dioxide, Carbon Footprint & Global Warming

Climate change, or global warming, is the gradual increase in global temperature due to a change in the composition of the earth's atmosphere. When greenhouse gases accumulate in the atmosphere, they act like a blanket around the earth, so that less heat escapes, creating a greenhouse effect. Humanity contributes to climate change by burning fossil fuels, deforestation, and increased farming activities.

The Carbon Footprint of any activity is a measure of emissions of all greenhouse gases emitted during the carrying out of that activity and it is universally measured as the equivalent mass of Carbon Dioxide (CO2e) emitted.

CO2 (Carbon Dioxide) emissions contribute to the growing issue of climate change. To mitigate the serious global effects of Climate Change it is important to reduce the emissions of every activity as much as possible.

The carbon footprint of an event is the total impact of the event relating to the total amount of CO2 Equivalent (CO2 e) emitted due to the direct or indirect consumption of fossil fuels. This would include aspects such as energy consumption, the waste generated, marketing, transport, and more.

Operational Boundaries

Emissions result from a variety of activities, like heating and cooling, powering stages, traveling to site, or managing waste produced. Direct emissions are emissions within a company's organisational boundary from sources that the company owns or controls, like business travel in a company car or the combustion of fuel in the company's boilers and furnaces. Indirect emissions result from a company's activities but from sources owned or controlled by another company.

These emissions are categorised into three groups or 'scopes' by the most widely-used international accounting tool, the Greenhouse Gas (GHG) Protocol. While scope 1 and 2 cover direct emissions sources (e.g., fuel used in company vehicles and purchased electricity), scope 3 emissions cover all indirect emissions due to the activities of an organisation, like the purchase and transportation of goods and services, the waste disposal or the staff, artists, audience and contractors travel and transport.

Scope & organisational boundaries

The main objective of this carbon analysis is to create a baseline measurement to understand the carbon impact of **Galicia Design Week 2020** so we can identify areas where we have room to make reductions and balance it. We are measuring all the activities involved in the design, planning, execution, and dismantling where measurable data is available.

The organisational boundaries are set based upon the organisational units required to prepare and stage the event over which Galicia Design Week 2020 has operational control.

Location/Venue: **Plaza de Lugo de A Coruña and online**
Date: **9th - 13th November 2020**
Organisation:
Duration: **5 days online, 2 days physically**
Event Type: **Hybrid**

Including/excluding criteria

Generally, an emission source has been included if it is relevant and under the event's operational control, or if organisers can exert a direct influence on the decision processes which can directly impact associated emissions.

To decide which emission sources are relevant the following criteria have been used:

- Materiality or significance of the emissions of the source with respect to the total emissions of the event
- Availability of auditable data (lack of information)
- Relevance for interested third parties (participants, local community, authorities, suppliers, etc.)
- Existence or not of emission reduction potential.

It is important to note that Carbon reported here is only a fraction of the actual impact, based upon available data.
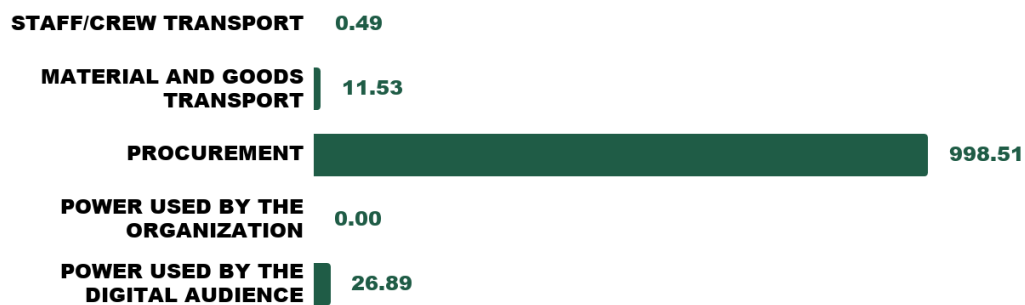
Results

Carbon Analysis

TOTAL Carbon Footprint estimated for Galicia Design Week 2020 from all data available is:

1.04 tonnes CO2 eq *

Event Total Carbon Impact in kg CO2e

STAFF/CREW TRANSPORT	0.49
MATERIAL AND GOODS TRANSPORT	11.53
PROCUREMENT	998.51
POWER USED BY THE ORGANIZATION	0.00
POWER USED BY THE DIGITAL AUDIENCE	26.89

*It is important to note that part of the digital impact hasn't been completely measured due to unknown data such as the exact number of audience and their time spent watching the event. Therefore the actual Carbon Footprint will be slightly greater than the one shown in this report. This should be taken into account for comparability if data gathering expands in future editions.

Event Carbon footprint by scopes

As explained before, while scope 1 and 2 cover direct emissions sources (e.g., fuel used in company vehicles, power generation and purchased electricity), scope 3 emissions cover all indirect emissions due to the activities like the purchase and transportation of goods and services, or the staff and contractor travel and transport.

Taking into account the different scopes the result for **Galicia Design Week 2020** is:

Festival Total Carbon Footprint By Scopes (in metric

Scope 1	0.0005
Scope 2	0.0000
Scope 3	1.0380

Where Scope 1 is due to the use of the car rented by the organisation to transport production materials. It is considered within the scope 1 because, although not owned by the organisation, it is under his control the type of vehicle and fuel to use.

The car was used during the 2 days physical event that traveled 6 km. The rest of the staff were a walking distance from their homes, so no other car or vehicle has been used.

The carbon within **Scope 1 equals 0.49 kg CO2e**

Scope 2 emissions are calculated as 0 due to no electricity purchased directly for the event production, nor fuel used for power generation or production vehicles owned by the event organisation. The event has been powered by a 100% renewable solar system generator.

Within **Scope 3 emissions**, the impact of the following activities are included:

Power used by the organisation (for physical part)

There is no impact of power usage as the energy used was 100% renewable sourced (battery solar powered system that will be used in future editions and in other events). The transport of the battery from the Czech Republic has been considered within the Material and Goods Transport Category.

Power used by the digital Audience

To estimate the impact of power use by the audience, considering lack of available data on actual time spent by the audience on the website or watching videos, the worst scenario is assumed where all web visitors watched all videos from an "average device"[1].

The carbon footprint of streaming video depends first on the electricity usage and then on the CO_2 emissions associated with each unit of electricity generation. The worst scenario has been assumed considering that all audience had the usual electricity tariff,[2] hence the spanish electricity mix for 2019 has been considered as opposed to any renewable home electricity tariff.

The impact of the usage of the website[3] is based on the number of visits during the digital event duration. 1886 visits according to the event organisers.

The impact of **Power usage by digital audience estimated is 26.89 kg CO2e.**

Material and Goods Transport

Based on the information provided by the organisation, the following journeys occurred to transport materials purchased for the event:

- Shipment of flyers from Vitoria to Coruña (average van considered)
- Shipment posters and vinyls from Vigo to Coruña by truck
- Transport of exhibition modules from Santiago to Coruña truck (this vehicle only transported the exhibition modules)
- Shipment of tent from Madrid to Coruña by truck
- Shipment of generator from Czech Republic to Coruña by truck

Total carbon footprint **Material and Goods Transport equals 64.7 kg CO2e.**

Procurement

The data provided for procurement represents all materials and items purchased for the physical part of the Galicia Design Week 2020:

- Wood Stand: 12 wood modules designed and purchased for the event and converted into tables after the event

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[1] average on different devices made based on: smartphones and tablets: calculations based on Urban et al. (2014) and Urban et al. (2019), iPhone 11 specifications (power consumption and battery capacity), and iPad 10.2 specifications; laptops: Urban et al. (2019); televisions: Urban et al. (2019) and Park et al. (2016), and weighted based on Netflix viewing data by devices (70% TVs, 15% laptops, 10% tablets, 5% smartphones). source: https://www.iea.org/commentaries/the-carbon-footprint-of-streaming-video-fact-checking-the-headlines

[2] no eco tariff or Guarantee of Origin supplier considered that would reduce the CO2e emissions due to their electricity use. The spanish electricity mix for 2019 has been considered to make the estimation by using the emission factor that the National Commission for Markets and Competition provides every year. https://gdo.cnmc.es/CNE/resumenGdo.do?anio=2019

[3] To estimate the impact of the website, the "website carbon calculator" have been used: https://www.websitecarbon.com/website/follow-gal-follow20/, https://www.websitecarbon.com/how-does-it-work/

- A tent that will be reused in other festivals and in a camping area for 6 months, for many years
- 5 litres of paint
- 23 vinyls (PVC free)
- 600 Flyers (cotton and plantable seed paper)
- 760 Posters (Recycled paper)

Procurement carbon impact from all data available is estimated as **999 kg CO2e**

Solid Waste & Recycling, Water Usage and wastewater

Some cardboard from packaging was generated as waste and sent to municipal paper and cardboard recycling bins. These haven't been taken into account for emissions here to avoid double counting of CO2 emissions. It would mean less than 5g CO2e in any case assuming it was recycled.

No water or wastewater was used for this event as no toilets, taps or showers where necessary for the type of event.

CO2 e savings

It is worth mentioning that at least 59 kg of CO2e have been avoided from all borrowed and reused materials such as the use of digital screens, wood boards, easels and chairs borrowed and not purchased.

Recommended Actions

The data gathered for this event has been really exhaustive and accurate. Almost all activities that cause direct or indirect GEI emission have been taken into account. The carbon footprint calculated will be offset by purchasing CO_2 emission rights to sustainable Galician projects.

 The 2 areas we find the event has more reduction potential are:

Procurement

The biggest impact for the Carbon Footprint of the event (99%) has been the procurement, and within it, the manufacturing of the 12 wooden modules. This is because the rest of the materials were borrowed or reused, hence no carbon impact due to their manufacturing is applied to the event. As we accounted for the impact of purchased items in this report, those that are reused in following editions won't have their emissions counted again, i.e. should wood be reused next edition it's emissions won't be double counted.

The material sources have been carefully selected to be the least harmful possible to the environment.

We recommend to keep reusing, renting or borrowing the items whenever possible. Consider whether 12 modules are necessary or if they could be designed to last longer and be reused for next editions. Keep also looking for the more environmentally and socially responsible sources of raw materials. Seek the closest suppliers in order to reduce emissions from transport and shipments.

Power used by the digital audience

The impact of power used by the digital audience and the website, compared to other activities such as purchase and transport of goods and build materials, is negligible. Still it would be interesting for the following editions to monitor how many people watched the videos and the website and for what duration, in order to calculate the actual carbon emissions due to the digital event activities. This can be done by registering forms and surveys, for example, or website and platform metrics.

Another recommendation is to look for a greener website[4] design or implement actions to reduce the website CO_2 impacts such as:

- Switch to a green host: Check for example The Green Web Foundation
- Make your website more efficient by reducing the images or video size. On most websites, images and videos are the largest contributors to page weight. The more images and videos you use and the larger those files, the more data needs to be transferred and the more energy is used.

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[4] More information about how to reduce the website carbon impact here: the Sustainable Web Manifesto.

Appendix

Methodology to calculate the carbon footprint of Galicia Design Week 2020

Consistent with the accounting and reporting principles of the GHG Protocol and ISO 14064.1 the primary methodological guiding principles of this carbon footprint are:

1. Set the scope and organisational boundaries widely to incorporate emissions under the event's operational control and/or direct influence
2. Set operational boundaries to account for direct and indirect emissions (Scopes 1, 2 and 3);
3. Set clear inclusion/exclusion criteria to decide on what is included and what is not included in the scope;
4. Identify a consistent, relevant and good quality set of carbon emission factors that are to the extent possible representative of the location and setting of the event;

Including/excluding criteria

In general lines, an emission source has been included if it is relevant and under the event's operational control or if organisers can exert a direct influence on the decision processes when it can directly impact associated emissions.

To decide which emission sources are relevant the following criteria have been used:

● Materiality or significance of the emissions of the source with respect to the total emissions of the event
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Operational Boundaries

Emissions result from a variety of activities, like heating and cooling, powering stages, travelling to site, or managing waste produced. Direct emissions are emissions within a company's organisational boundary from sources that the company owns or controls, like business travel in a company car or the combustion of fuel in the company's boilers and furnaces. Indirect emissions result from a company's activities but from sources owned or controlled by another company.

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DATA Gathering and calculations

- Transportation (Audience, artists, production and staff as well as onsite vehicles)
- Power - Energy Consumption (electrical, Diesel, Biodiesel) given by the power contractor.
- Procurement (New materials purchased for the purpose of the event)
- Food quantity/weight centage/quantity of various food types
- Waste - Collection of waste (amount of waste and type collected, given by waste contractor)
- Consumption of water & quantity of wastewater disposal
- Accommodation: The total of people lodged during the festival (name of hotel/rooms)

To carry out this study, different calculation procedures have been adapted based on the data available for each of the parameters analyzed, although the general methodological basis for calculating the emissions derived from these activities is always the same, consisting of the application of the following formula:

Carbon Footprint (t CO2) = Activity Data x Emission Factor

Where:
- **Activity data =** the parameter that defines the activity and that is related to the emission factor (for example m3 of natural gas)
- **Emission factor =** amount of CO2 emitted by each unit of the "activity data" parameter (for example 2.16 kg CO2 / m3)
- **The unit used to expose the results (t CO2) =** representation of the equivalent tonnes of CO2, the universal unit of measurement that indicates the global warming potential (GWP) of each of the GHGs.

Conversion factors:

Data gathering covers, in addition to the activity data, the secondary data (conversion factors and emission factors) applicable to them.

These factors have been obtained from reliable and updated published sources. Specifically, the following sources have been used:

- UK Government's Greenhouse gas reporting: conversion factors
- The central International Energy Agency (IEA). The carbon footprint of streaming video
- Spanish Commission for Markets and Competition, 2019 official source from spanish government for the electricity mix.
- Carbon Metric Carbon Factors
- LCA calculator: https://pro.lcacalculator.com
- The website Carbon Calculator