



FIS Events Emission Estimation Summary



Executive Summary

The International Ski Federation (FIS) has requested support in establishing an estimated breakdown of their carbon emissions across 177 global events for the 2023/24 ski season. An Indicative Carbon Footprint Analysis has been created using data gathered from 20 of the 177 of events to estimate the total carbon footprint for events during the ski season.

There has been a significant effort by FIS to collect and source as much data as possible from each of the events hosted over the ski season. 20 of the events provided a detailed response to the survey provided. Another 49 responses were received from a high-level questionnaire sent regarding the main numbers, which had supplemented the original 20 detailed questionnaires provided. Estimations have been made to measure the GHG emissions associated with all 177 events based off the responses.

As part of the project, separate to the footprint measurement and the work completed by the Planet Mark, Deloitte was engaged by FIS to conduct a carbon footprint assessment. The assessment included the following:

Reviewing FIS emissions boundary, assessing the relevance of operational and value chain emissions included from an organisational and event boundary approach in line with the UN S4CA Framework. This included a high-level review of the key assumptions and estimations used for event emissions calculations within FIS' emissions boundary.

Reporting year:

The events that were analysed were from the year 2023 – 2024 ski season.

Reporting Boundary:

177 events were provided by FIS to estimate the emissions for. These are organised as part of the 2023 – 2024 ski season which FIS are associated with.

Emissions measured:

Electricity, T&D Losses, Fuels. Waste, Water, Participant Travel, Spectator Travel, Hotels, Food

Event types:

Snowboard, Alpine, Multiple, Cross country, Half pipe, Aerials, Nordic combined, Ski jumping, Moguls, Grass ski, Free Style, Telemark, Para Alpine, Para Cross Country, Para Snowboard, Speed Ski, Ski cross, Snowboard Parallel, Snowboard Cross, World cup, Raw Air & Nordic Combined,

Aim of the project:

To estimate the emissions associated with ski events that have been completed during the 2023 – 2024 ski season.



Estimated Carbon Emissions

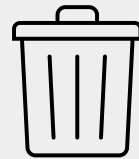
58,600.0
tCO₂e total emissions

Total emissions equivalent to
34,291 return flights from London to New York

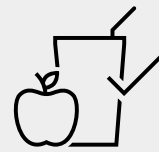
331.1
tCO₂e per event



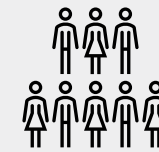
Utilities
2,856.1 tCO₂e



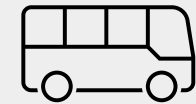
Waste
71.4 tCO₂e



Food
2,938.5 tCO₂e



Other
626.4 tCO₂e



Participant travel
52,107.7 tCO₂e

All rows and tables are rounded to one decimal place. This may lead to slight discrepancies in totals within the report.
Other includes hotel stays, other fuels and other emissions that do not directly fall into those categories.




Estimated Carbon Emissions

Total estimated emissions: **58,600.0 tCO₂e**

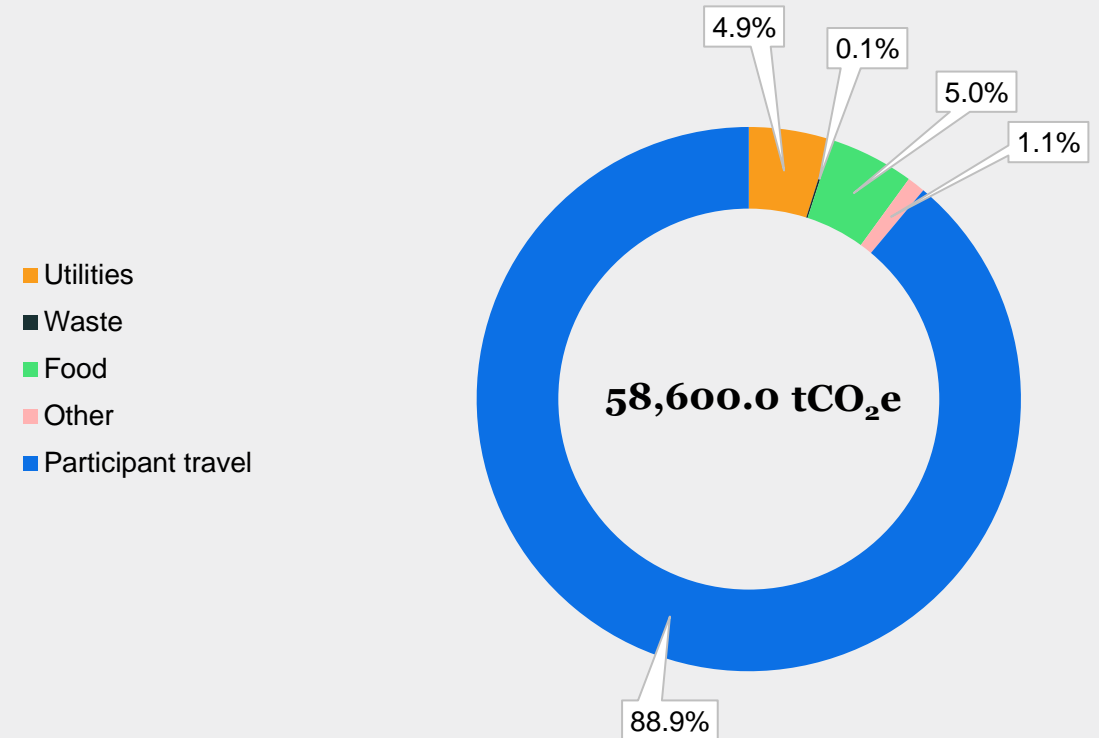
Assumptions around participant travel have the biggest impact on total estimated emissions of an event when compared to on-site emissions.

The greatest source of estimated emissions were down to participant travel which make up 88.9% of the total estimated emissions.

Emission source	tCO ₂ e	%
Utilities	2,856.1	4.9
Waste	71.4	0.1
Food	2,938.5	5.0
Other	626.4	1.1
Participant travel	52,107.7	88.9
Total	58,600.0	100.0

 All rows and tables are rounded to one decimal place. This may lead to slight discrepancies in totals within the report. Other includes hotel stays, other fuels and other emissions that do not directly fall into those categories.

Emissions sources for ski season 2023 - 2024, tCO₂e



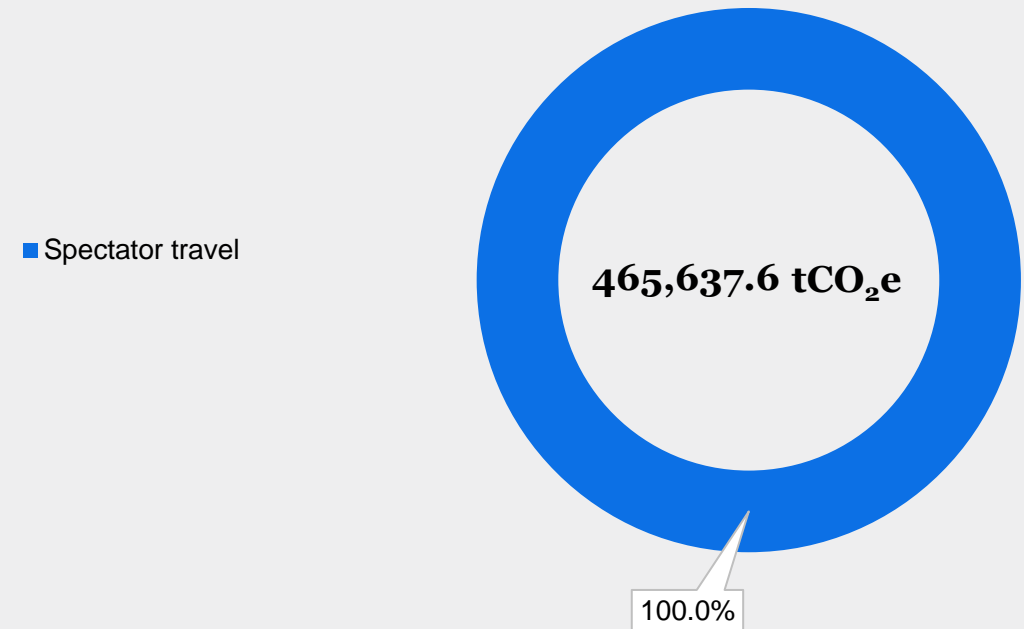



Estimated Carbon Emissions

Assumptions around spectator travel have the biggest impact on total estimated emissions of an event and these have been reported separately which is in line with guidance from the Climate Action Framework.

Emission source	tCO₂e	%
Spectator travel	465,637.6	85.9
Total	465,637.6	100.0

Emissions sources for ski season 2023 - 2024, tCO₂e



 All rows and tables are rounded to one decimal place. This may lead to slight discrepancies in totals within the report. Other includes hotel stays, other fuels and other emissions that do not directly fall into those categories.

Methodology

Quick introduction into the methodology

Overview

International Ski Federation (FIS) has requested support in establishing an estimated breakdown of their carbon emissions across 177 global events for the 2023/24 ski season. An Indicative Carbon Footprint Analysis has been created using data gathered from a sample of events to estimate the total carbon footprint for events during the ski season. With limited accurate data available, the project has been to measure and provide an estimation to determine a reasonable total emissions estimate.

FIS have included 177 Global events for the 2023/24 Ski season. 20 detailed questionnaire responses were provided with emission source activity data such as electricity usage etc. Another 49 responses were received from a high-level questionnaire sent regarding the main numbers, which had supplemented the original 20 detailed questionnaires provided.

The emissions for the 157 events where no activity data was provided was modelled off the 20 events where we received this data. The further 49 responses provided information regarding spectator numbers and participant numbers.



Utilities

- Electricity
- Transmission and distribution losses
- Other fuels: Diesel, Kerosene
- Waste
- Water
- Food purchased

Utilities data from 20 events was used to calculate the kWh consumed per person, per day. This figure was applied to other events without data by multiplying it by the number of attendees and event days.

Emissions were calculated using grid-average factors for each country that the event was held.



Participant travel

Participant travel includes competitors and staff, not spectators and event-specific transport. Planet Mark has estimated distance and travel type.

Since exact travel distances weren't available, the return trip was estimated from Zurich to the event country, then multiplied by the number of participants and spectators to estimate total distance.

Emissions were estimated assuming 10% travel by train, 80% by car, and 10% by plane. For international events outside Europe, 100% were assumed to fly.

Hotel stay emissions were calculated using an average number of nights per participant, based on FIS data. Country-specific emission factors were applied, with proxies used if needed.



Spectator Travel

Spectator travel was estimated based on the spectator numbers for each event. Number of spectators were provided via the questionnaires that were submitted. It assumes 1% of spectators are already at the venue, 59% travel locally (100km), 10% use local transport, and 30% travel by plane (20% European, 10% international).

For international events, 30% of travel is assumed to be by plane.

Distances were estimated based on the event location, with emissions factors applied according to the mode of transport and travel type (local, European, or international).



Assumptions

- Assumptions have been made on the movements of spectators to the events and the mode of travel of which they used to get to the events. Without any real-time data this could vary from the assumptions made.
- Whilst we received data from actual events it has not been possible to verify this data and there is a lack of evidence regarding the activity data that has been reported at each event.
- There is a lack of data regarding the infrastructure of an event. Course build, event transport etc. Currently this has been included within the fuel and utilities data and a further breakdown of this would be beneficial to calculate this more accurately.
- There is a lack of actual participant and spectator travel data. Where athletes, camera crew, infrastructure crew etc. attend the event data needs to be collected to accurately understand travel type and distance travelled. Assumptions have been made in this area to calculate associated carbon emissions.



Recommendations

- Conduct travel surveys of spectators to understand a more accurate picture of the distance spectators travel to the event and the mode of travel they have used to get to the event.
- Improve data collection process for all events across the world to understand actual energy consumption so a more accurate estimation can be provided regarding the emissions associated with the ski resort. Develop a specific and logical methodology for improving data quality across all events.
- Ensure all data is collected on all activities associated with the event such as infrastructure, travel, utilities etc. If there are still gaps in data, ensure data is collected across a range of locations and event types to more accurately estimate emissions from different types of events.
- Conduct actual event inspections to understand all fuel sources are being included and we have the most accurate representation of what a ski event entails.

