Carbon Footprint

Summary Report

Billie-Jean King & Davis Cup
Malaga, Spain
November 2024

Undertaken by the International Tennis Federation (ITF)
and assisted by AQ Green TeC (AQGT)

Contents

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Approach and emissions overview

Approach

- The approach used to measure greenhouse gas (GHG) emissions (emissions) resulting from the Billy-Jean King Cup and Davis Cup events held in November 2024, combined direct data collection from the ITF and event service providers and estimations based on internally developed assumptions or externally sourced data
- The approach was aimed at measuring material sources of emissions associated with the events whilst aligning with best practices for event-based carbon footprint assessments
- The methodologies used to assess and calculate greenhouse gas emissions associated with the events were aligned with the principles of the GHG Protocol
- Emissions were calculated for electricity usage, purchased goods, transport of event equipment, and waste generation. Travel-related emissions for attendees (business travel category), including air and ground travel, were also calculated using provided data and assumptions based on travel distances. Accommodation emissions were determined using country-specific emission factors for hotel stays in Spain
- Where assumptions were necessary, based on limited data availability, these have been described in the methodology section of this summary report

Data Presentation

- For data presentation in charts, figures can be rounded which may result in slight variations when compared with source documentation (available upon request.)

Emissions overview

- Total emissions: 9,309.090 tCO_2e
- Emissions per spectator*: 0.114 tCO_2e (114 $kgCO_2e$)

GHG categories included in measurement

- Business travel
- Electricity consumption
- Purchased goods and services
- Waste generated in operations
- Upstream transport and distribution

* Based on 82,000 spectators (estimated)

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Emissions by category

GHG emissions categories	tCO_2e
Business travel	9,226.840
Electricity consumption	41.980
Purchased goods and services	22.370
Waste generated in operations	12.490
Upstream transport and distribution	5.410
	9,309.090

Table 1

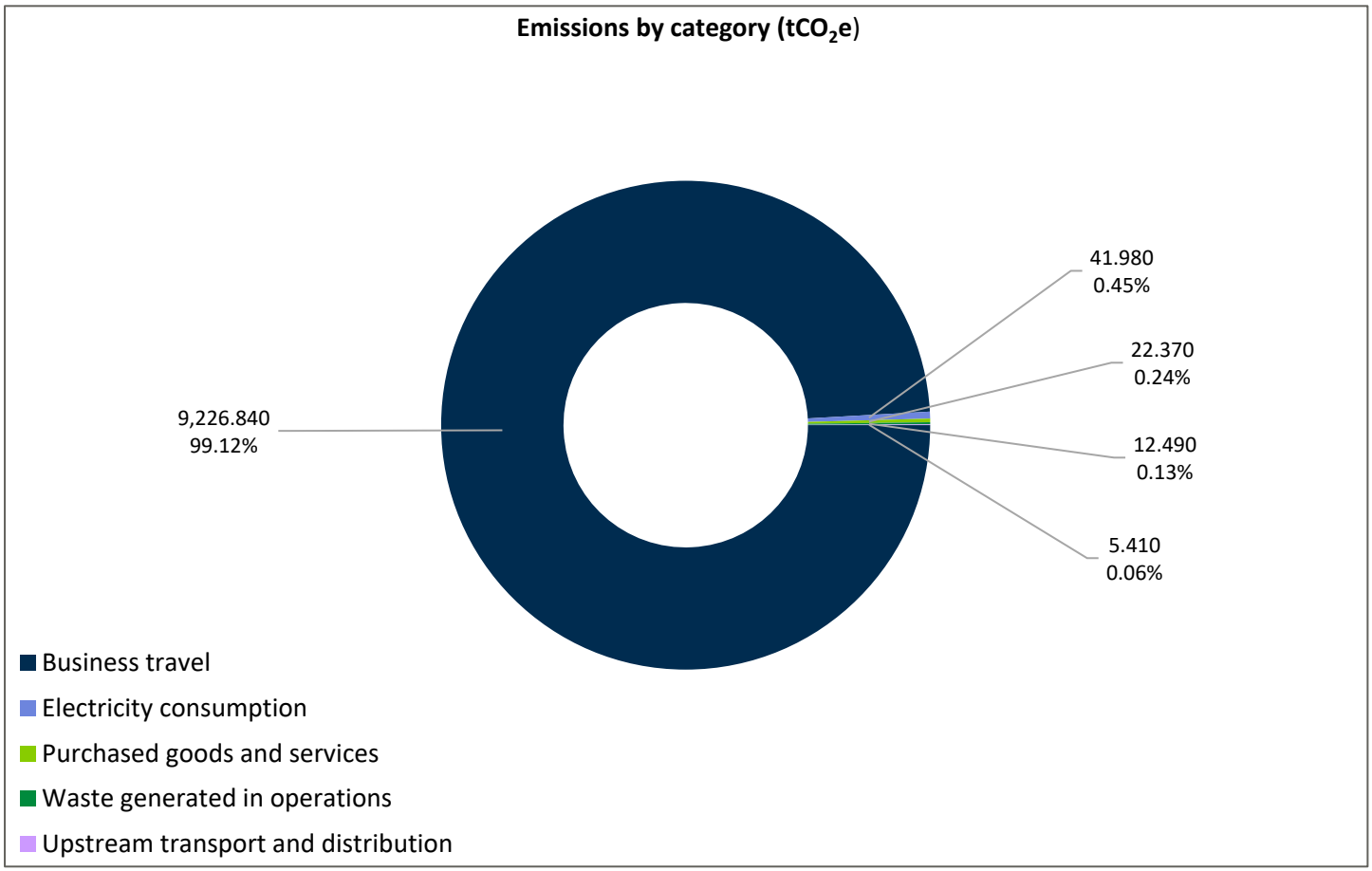

Figure 1

Emissions by stakeholder group

Stakeholder groups	tCO_2e
Spectators (incl. federation members)	8,014.610
Players & Entourage	903.740
All other stakeholders (staff, media, partners, guests etc.)	308.490
Venue	82.250
	9,309.090

Table 2

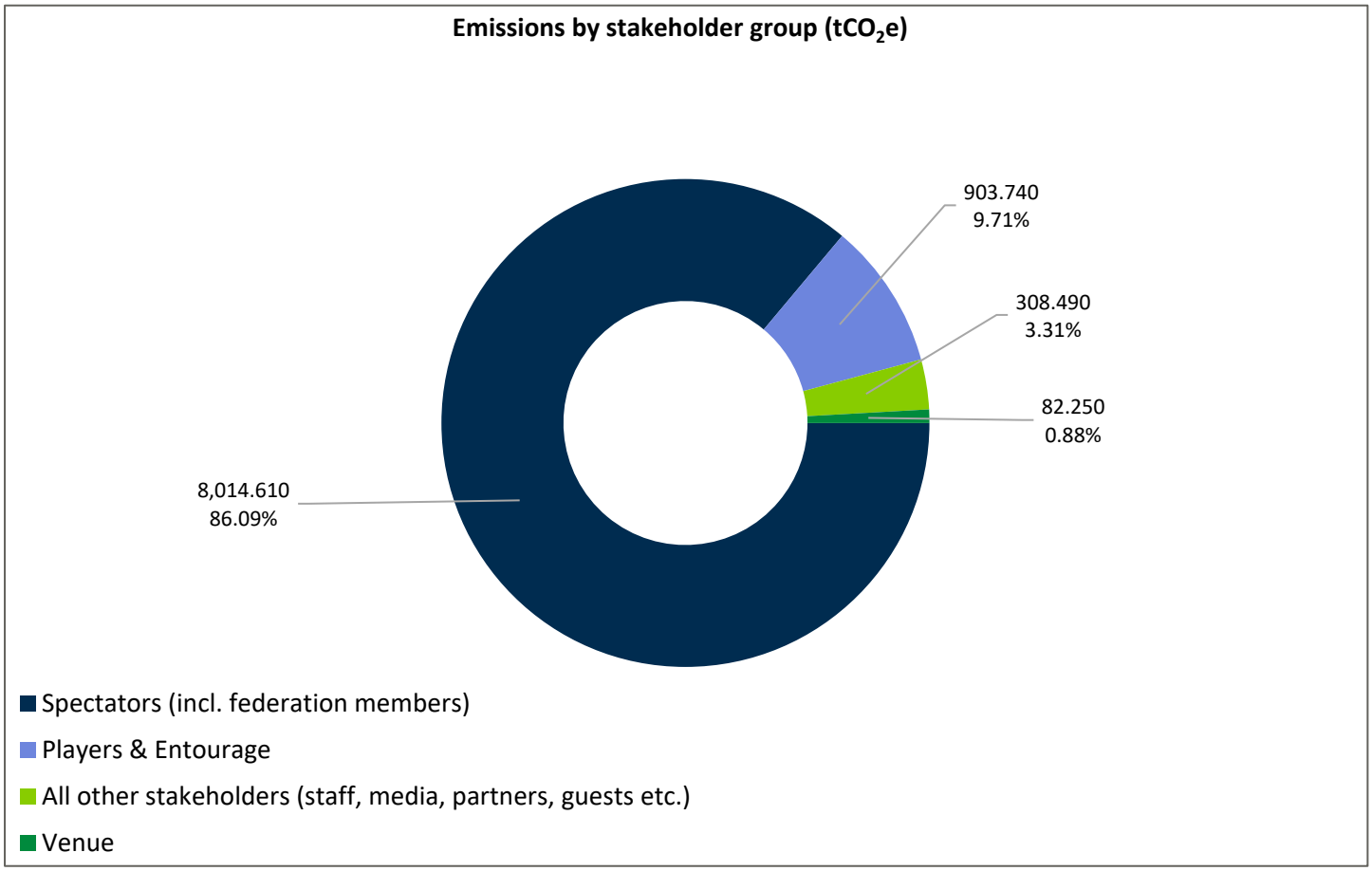

Figure 2

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Business travel: emissions breakdown

Travel and accommodation	tCO_2e
Air travel	8,891.260
Ground travel	188.050
Hotel stay	147.530
	9,226.840

Table 3

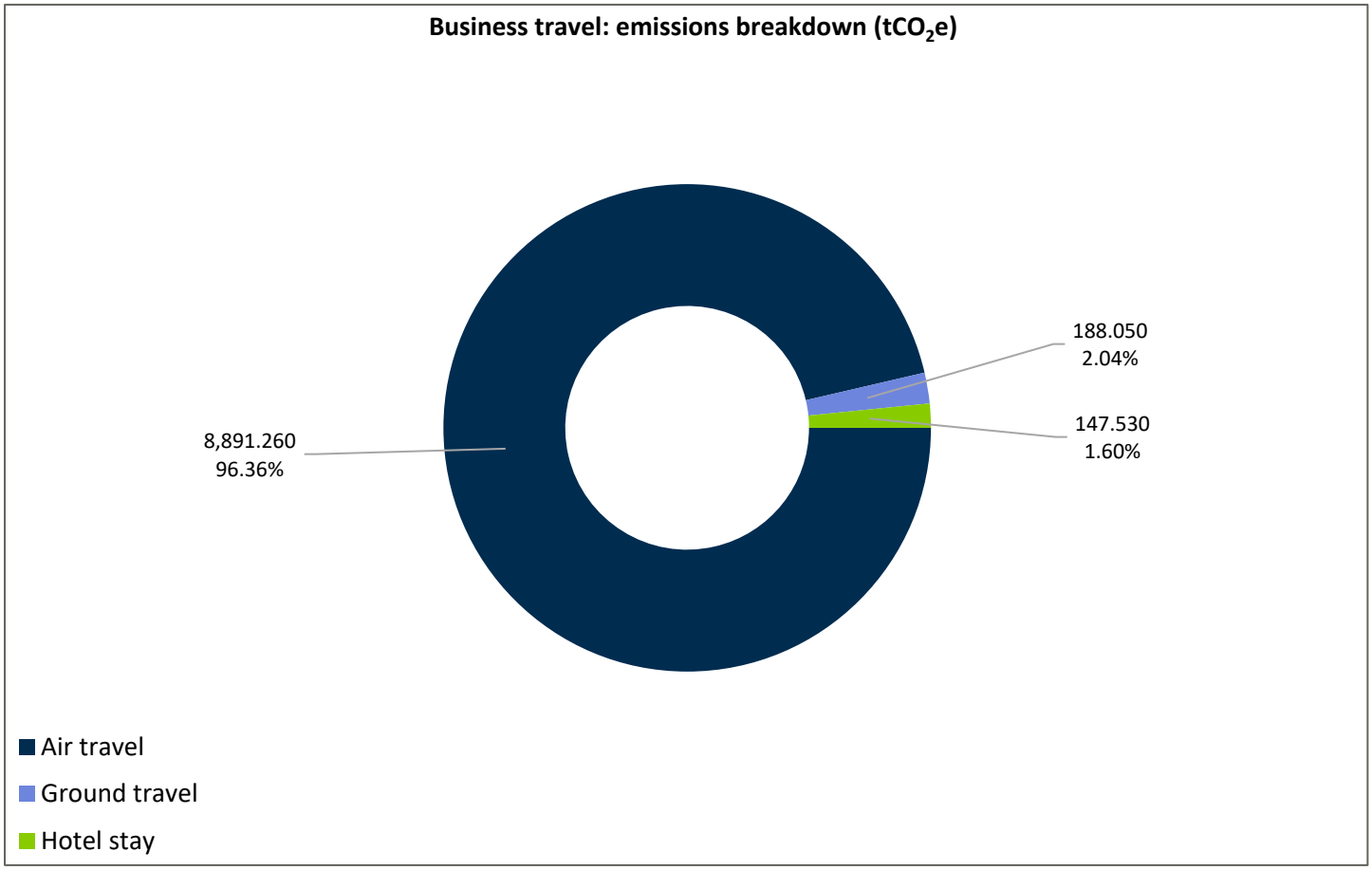

Figure 3

Business travel: emissions breakdown by stakeholders

Travel and accommodation	tCO_2e
Spectators - Davis Cup	4,390.680
Spectators - BJK Cup	3,623.910
Players & Entourage - Davis Cup	502.100
Players & Entourage - BJK Cup	401.660
Other stakeholders - BJK & Davis Cup	308.490
	9,226.840

Table 4

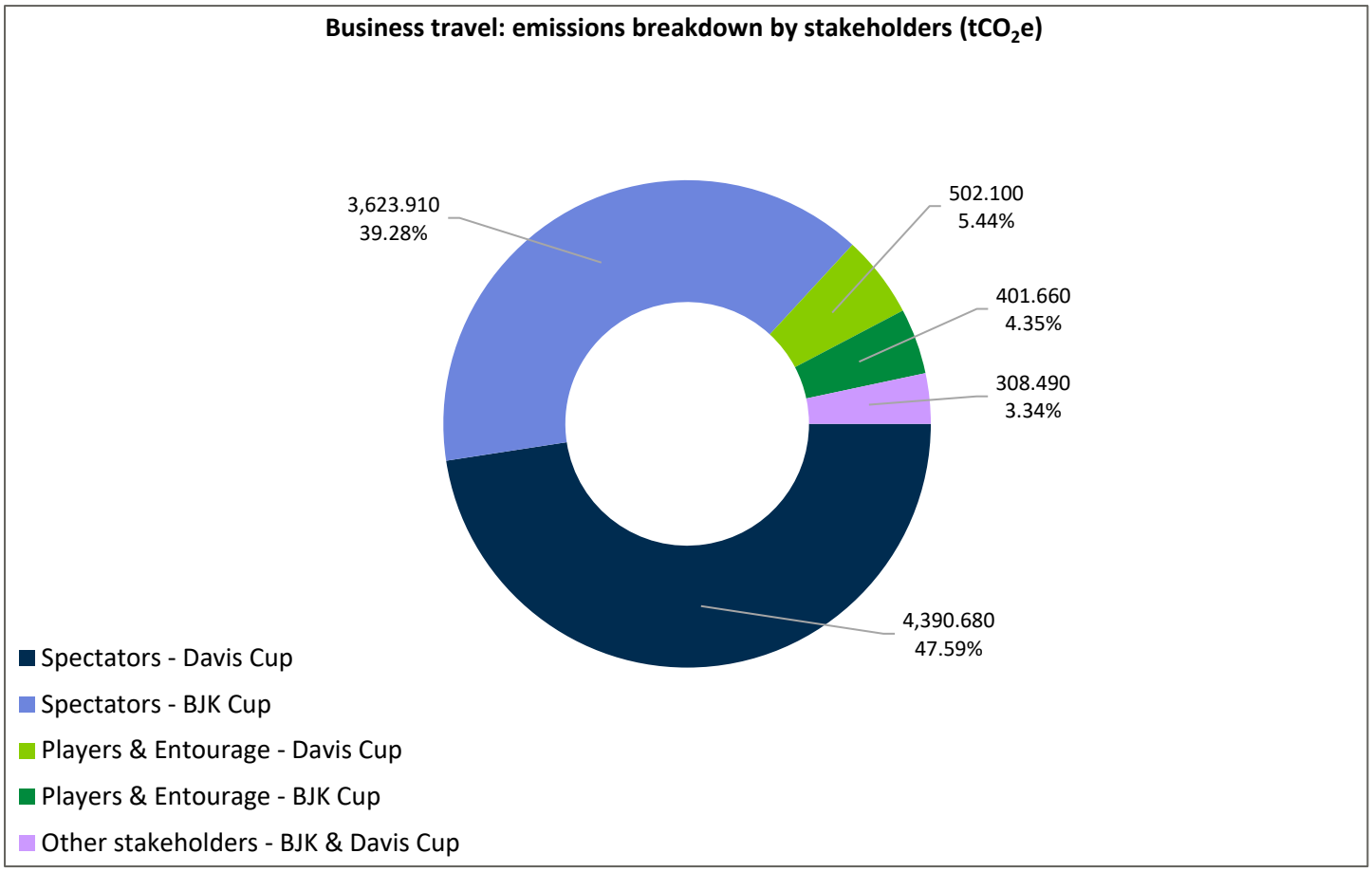

Figure 4

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Purchased goods and services: emissions breakdown

Purchased goods and services	tCO_2e
Catering	16.580
Materials	5.740
Water consumption	0.050
	22.370

Table 5

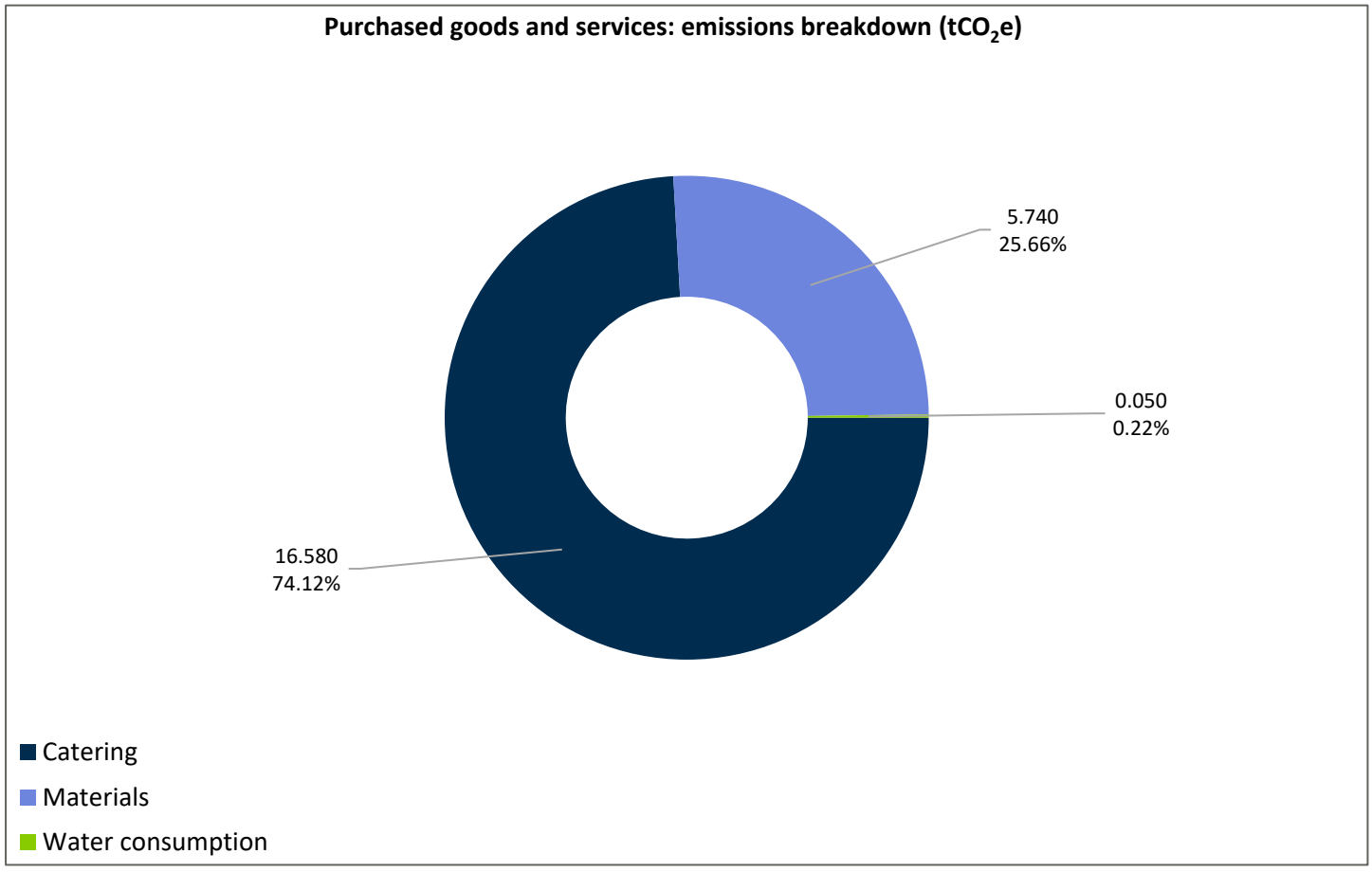

Figure 5

Recommendations

Improve data collection

- Strengthen collaboration with suppliers and service providers to identify opportunities for improving the accuracy and completeness of emissions-related data
- Integrate additional tools and systems at events and engage with relevant stakeholders ahead of time to facilitate the collection of data on electricity consumption, waste generation and water use

Travel data

- Seek more comprehensive travel data from attendees
- Expand the data captured during registration and communicate data needs to travel agents where relevant
- Explore the use of fan engagement platforms to enhance the quality and depth of travel-related information gathered

Data quality

- Several data gaps were encountered during the reporting process
- Reasonable assumptions were applied where necessary, based on available evidence and typical activity profiles
- Ongoing efforts are focused on improving future data quality to reduce reliance on assumptions

Business travel

Air and ground travel

- Emissions from air and ground travel, to and from the events, were calculated for spectators (federation members & fans), players & entourage (support team), and other stakeholders consisting of staff, media personnel, event partners, associates, and guests
- Where available, departure and arrival information for stakeholders was provided by the ITF
- Where data was not provided, assumptions and estimations were made in consultation with the ITF
- All ground travel modes included provisions for upstream Well-to-Tank (WTT) emissions
- The Great Circle Distance (GCD) approach was used for air travel calculations, and the method included provisions for upstream Well-to-Tank (WTT) emissions and radiative forcing (RF) for climate change effects from non-CO2 emissions
- Unless stated, all flights were calculated based on a) average class seating and b) flight distance:
  - <900km: domestic flight
  - 900 – 3,700km: short haul flight
  - >3,700km: international flight
- All journeys, for all modes of travel were calculated as return journeys

Spectators (federation members & fans)

- No data was available for spectator travel and the following assumptions were therefore applied:
  - The following daily spectator capacity values were used in calculations:
    - BJK Cup: 4,000 spectators
    - Davis Cup: 10,000 spectators
  - Total spectator attendance was estimated using an assumed percentage of daily capacity:
    - For the BJK cup, a 50% capacity was assumed for the first 3 days and 100% capacity for the remaining 4 days.
    - For the Davis cup, a 100% capacity was assumed for all days
- Using the federations ticket allocations, the member seats estimated per day were deducted from the total daily seating capacity and the balance of the seating capacity was allocated with the assumption that 95% were local spectators from Malaga and 5% travelled from other European countries

Methodology

- For the federation members the following assumptions were made regarding their travel:
  - It was assumed that federation members attended an average of 3 days per event
  - All federation members (except those from Spain) were assumed to have travelled by air
  - The country of departure was provided for each member, and the flight distances were estimated by obtaining a (direct) flight distance between the main airport of the departure country to Malaga Airport, Spain
  - For the federations with allocations to both events, it was assumed that 80% attended both events, and a single return air travel trip allowed for
  - A ground travel allowance was also assumed as follows:
    - 6km return train journey from the airport to the event location
    - 3 days of daily car travel of 18km per day during the event
  - For the federation members from Spain, it was assumed that:
    - 10% travelled by car, a one-way road distance of 500km
    - 20% travelled by air, a one-way flight distance of 650km with a 6km return train journey from the airport to the event location
      - both groups, did a daily road travel distance of 18km per day during the event over 3 days
    - the remaining 70% travelled locally, by car, to the event for 3 days,18km per day
- For the local and European spectators, the following travel assumptions were made:
  - Local spectators travelled an average daily return distance of 18km, of which 75% was by train and 25% by car
  - Spectators from European countries travelled by air. The air travel distance is based on an average distance of European countries represented by the participating federations for each event, 2,097km for BJK and 1750km for Davis Cup
  - An allowance for ground travel was assumed as follows:
    - 6km (return) train journey from the airport to the event location
    - 3 days of daily car travel of 18km per day during the event

Other stakeholders (staff, media personnel, event partners, associates, guests etc.)

- The number of other stakeholders and assumed travel behaviour were based on the hotel-stay data and ITF office travel sheets provided by ITF:
  - For ITF listed stakeholders from Europe, an average one-way flight distance (2,150km) was used
  - For ITF listed stakeholders from London, Heathrow airport was assumed as being the departure airport
  - For all Tennium listed stakeholders, an average domestic one-way flight (650km) distance was used
  - For the remainder of the various stakeholders, 70% were assumed to have travelled an average one-way domestic flight distance and 30% an average European one-way flight distance
  - A ground travel return train journey from the airport (6km) was assumed for ITF, Tennium and various other stakeholders

Players & Entourage

- Player & entourage numbers were provided for the Davis Cup and for the BJK Cup, it was assumed that there were 12 people from each of the participating countries
- The following assumptions were applied for all teams (except the Spanish team):
  - Players travelled business class flights, for BJK Cup this was assumed to be 5 players per country, for the remainder average flight class was assumed
  - A direct flight distance between the main airport of each departure country to the Malaga Airport, Spain was estimated for all team members
    - A ground travel estimation of 6km was applied for a return train journey from the airport to the event location
  - 20% of the Spanish teams were assumed to have travelled by car and an estimated one-way distance (500km)
  - 80% travelled by plane and a one-way, domestic flight distance of 650km was applied
    - A ground travel estimation of 6km was applied for a return train journey from the airport to the event location
- An official transfer service was provided for the event stakeholders (excluding local spectators and federation member spectators) between the airport, official hotels, venue, and other authorised destinations
  - The total kilometres driven for each car type was provided
  - Most of the transfer vehicles were hybrid (lower emission) vehicles

Accommodation

- Hotel stay data (room nights) was provided by the ITF for Davis Cup participants and their support teams as well as for ITF staff, media, business partners and others associated with the event
- For the participants of the Billie Jean King Cup, it was assumed that 12 participants including the support team members, from each attending country, stayed an average of 7 nights
- Spectators that flew to the event were assumed to have stayed in a hotel for 3 nights
- For federation members, a 3-night stay was assumed, half with single occupancy and the other half double occupancy rooms
- For the 80% of federation members who stayed for both events a 7-night stay was assumed, half with single occupancy and the other half double occupancy rooms
- A country-specific hotel stay emission factor for Spain was used to calculate emissions from accommodation

Electricity consumption

- The event utilised standard grid-supplied electricity and well-to-tank (WTT) and transmission and distribution (T&D) emission factors were applied

Purchased goods and services

- Event water consumption data was not available, so an assumption was made using the data provided for the prior year's events
- Emissions for event-specific items (lanyards, banners, flags, brochures) were calculated based on the weight of primary input materials in each item
- Emissions data for drinks containers was sourced from desktop research or calculated based on the weight of primary input materials in each item
- Emissions calculations from meals/catering used emission factors and other data sourced from research, for meat and no-meat meals. Meal numbers were derived from the total number of people who registered for the buffet service. It was assumed that 10% of total meals were no-meat meals and 90% were meat meals.
- Diesel consumption for generators and mobile equipment was provided and included provisions for upstream Well-to-Tank (WTT) emissions

Methodology

Waste generated in operations

- 3,200-litre waste bins were used to collect waste and the number of these bins emptied per day (by waste type) was provided. It was estimated that a 3,200-litre waste bin has a capacity of 480kg of mixed waste, or 160kg plastic or 320kg paper waste
- Mixed waste was assumed to have been diverted to landfill, and plastic and paper waste was assumed to have been recycled

Upstream transport and distribution

- Emissions from transport of event equipment by trucks and vans were calculated based on total kilometres travelled, considering truck type and including WTT emissions
- A total of 500 kilometres was estimated for local service providers (Malaga and immediate surrounds). All other distances were obtained using the car distance provided by Google Maps from the centre point of the city of departure the location of the event in Malaga

Emission factors

- In the absence of specific product, industry or regional emission factors, the most relevant DEFRA emission factor (and associated methodology) was used

Exclusions

- Promotional merchandise, tennis related equipment and other infrastructure set-up and take-down requirements were excluded from the calculation

Disclaimer

- The accuracy of the carbon footprint calculation depends on the quality of the data provided and other factors beyond AQGT's control. AQGT was not required to verify data and ITF acknowledges that the results are a best approximation, and AQGT does not guarantee that the results reflect the actual carbon footprint. AQGT can only support carbon-related claims that we have explicitly endorsed in writing

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