

IOF Carbon Footprint Report 2024

Estimated CO₂-e emissions of the IOF



Foreword

The IOF started to measure carbon emissions generated by its activity in 2019 that has been taken as our “baseline” year, that is, the reference for the evaluation of progress towards carbon neutrality.

The IOF carbon budget considers the CO₂-e¹ emissions of the organisation, not those of the wider orienteering movement. Although these represent a fraction of the whole impact of the sport on climate, we believe that focusing on the IOF as organisation, including all that falls under its direct control and responsibility, means “leading by example”, showing the way for National Orienteering Federations.

Therefore, the carbon budget encompasses the activities of the IOF President, Council, CEO, Secretary General, Office and Commissions, all together around 120 persons, the majority operating in European countries, but with a growing number of people from other continents.

The IOF joined the Sports for Climate Action² movement in 2019; in 2021 it signed the commitments of the Race-to-Zero³ campaign and **decided to exceed the goals by keeping under the level of emissions of 50% of the base year (2019) throughout the whole period until 2030**, instead of gradual approach.

This goal was achieved also in 2024, despite a non-negligible increase of emissions (+32%) vs 2023. This is indeed the third consecutive year

¹ There are a number of different greenhouse gases (GHG), each with a capacity to trap infra-red radiation and a lifetime of its own (CO₂, CH₄, N₂O, NF₃, SF₆, HFCs). For simplicity, the common measurement unit for GHG emissions is the CO₂-equivalent (or CO₂e), or the amount of CO₂ that has the same greenhouse effect.

² <https://unfccc.int/climate-action/sectoral-engagement/sports-for-climate-action>

³ <https://unfccc.int/climate-action/race-to-zero-campaign>.

Setting a target of 50% emissions reduction by 2030 vs the baseline and a net-zero by 2040.

Measure, report and publicly disclose the climate footprint and emissions reductions progress.

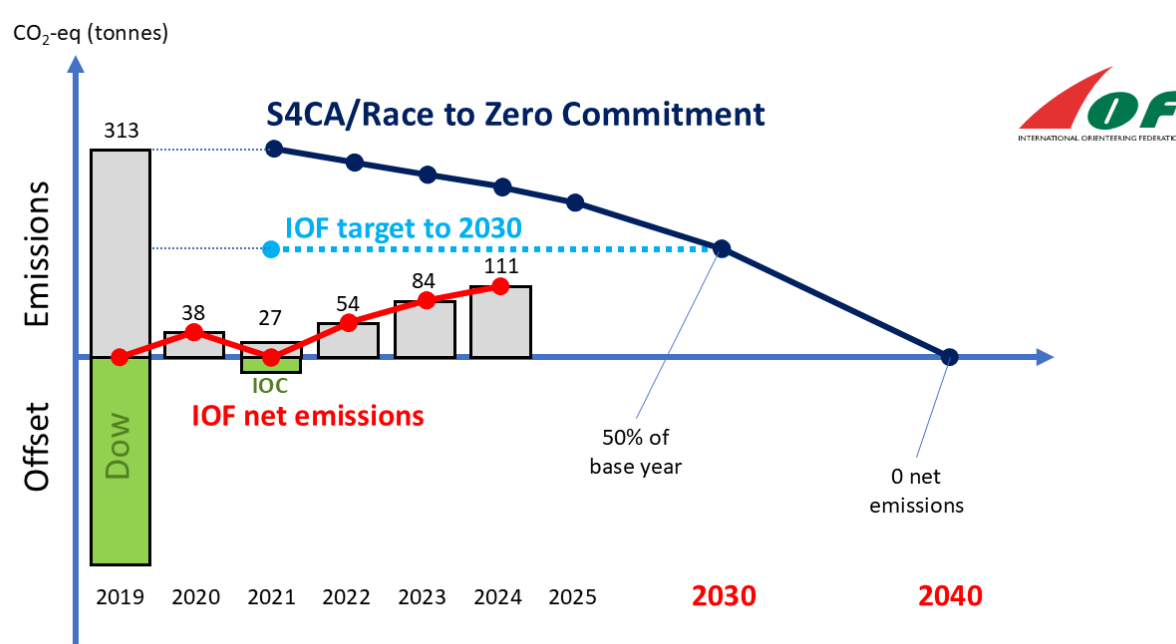
Plan for reaching net zero emissions.

Communicate the commitment to stakeholders and the general public.

that registered an increment of emissions over the previous one. This is certainly a consequence of a fully recovered level of activities after the Covid-19 pandemic, but it rings a bell of alarm that imposes a detailed analysis of the underlying causes in order to invert the trend.

Analysis of data

The total emissions have grown by 32% in 2024 compared to 2023, but are still significantly lower than the emissions of the baseline year (approximately a third of the 2019 emissions). This is in line with the commitment to remain below the 50%-line of the baseline every year until 2030.



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The year 2023 was the first after the outbreak of the Covid 19 pandemic in 2020 to witness an almost complete programme of orienteering events worldwide and 2024 can be considered a fully recovered level of international competitions.

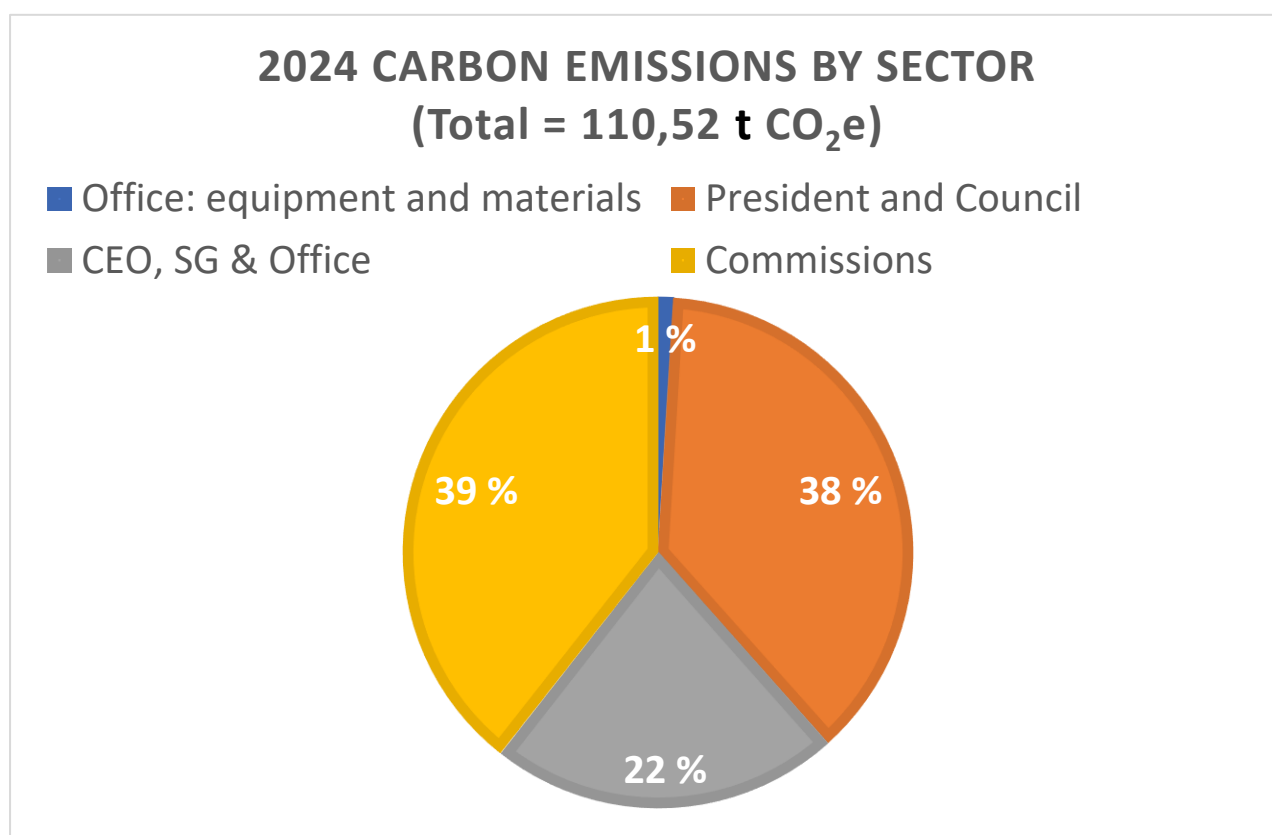
Emissions due to the organisation of events are outside the scope of the IOF carbon budget, in its present form, but the presence of IOF representatives (President or Council Members) and of IOF Office staff is included in the Organisation's functions. This of course implied travel and subsistence and related emissions that were included in the carbon budget.

Identification of sources

The analysis of sources takes into consideration two aspects:

- the sectors of the organisation responsible for emissions (President & Council, Commissions, Office staff, including CEO and Secretary General);

- the origin of emissions (type of transportation, hotel accommodation, videoconferences, office running).



The travels of President and Council members are due to three major causes:

- two in person meetings (there were four in the base year and before) that are still deemed necessary despite the introduction of videoconferencing;
- the presence of the President or Council member representing the IOF at international orienteering events, in particular towards local authorities, local organising committees and athletes;
- the participation of the President in meetings of international sports organisations in representation of the IOF.

Similar considerations for the CEO, SG and Office staff that are a necessary support to event organisers to ensure the observance of high-quality standards and for interactions with media producers.

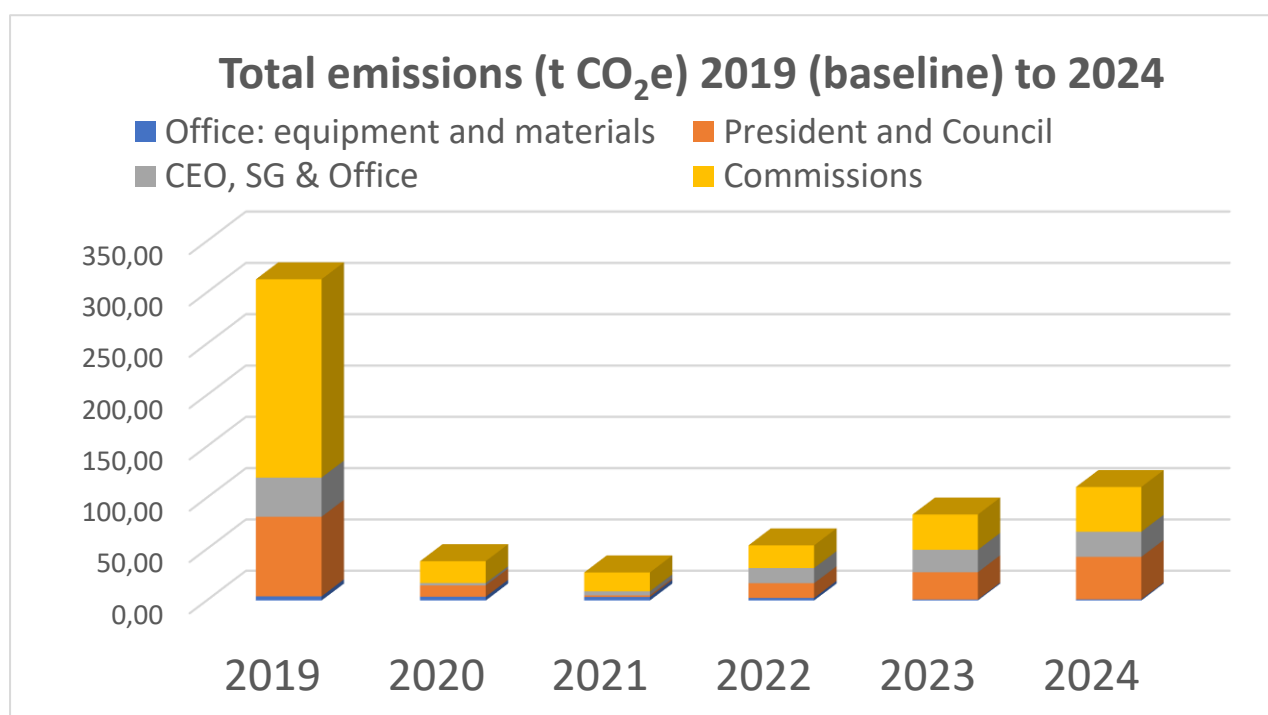
As for the Commissions, whose emissions represent 39% of the IOF total, it must be clarified that the number of people involved is significantly higher than those of the two former sectors combined, and that their meetings are now mainly run as videoconferences.

In order to reduce the number of in presence meetings, the Office, Council members and Commission Chairs received a full Office 365 licence in 2020, including the teleconferencing platform MS Teams and the shared storage space One Drive. This decision

proved extremely successful not only in the reduction of mobility CO₂ emissions, but also in allowing uninterrupted communications within and between the different groups.

Indeed, teleconferencing allowed for more frequent meetings, often managed in a more orderly way, and certainly more convenient for participants and cheaper for the IOF and Member Federations. Drawbacks exist but of a lesser importance: the need to accommodate for different time zones, shorter meetings and, in some cases, less effective one-on-one interaction.

The effect of these decisions on the IOF carbon budgets are easily appreciated by looking at the dramatic reduction of emissions: in 2020 the emissions had dropped from 313 to 38,3 t CO₂e and in 2021 they were less than 1/10 of the baseline (27,3 t). The easing of COVID-19 restrictions to mobility and events in 2022 saw a slight increase of emissions to 53,7 t and a further increase to 83.8 t in 2023 and to 110,5 t in 2024, with a return to normality after Covid-19.



As in the previous reporting periods, travel is, in relative terms, the dominant emission cause (91.8%; or 98.8% including hotel accommodation). However, the forced reduction of activities imposed by Covid-19 in 2020 and 2021 and the measures introduced by the Council thereafter have significantly reduced its impact in absolute terms with respect to the baseline.

2024 CARBON EMISSIONS BY SOURCE (Total = 110,52 t CO₂e)



The international nature of the IOF makes flying the almost inevitable choice when physical presence at meetings is required and it accounts for 97.7% of all mobility-related emissions and 89.7% of global emissions.

Virtual meetings were held by both the Council (5) and by the Commissions (38). As precise data on attendance were not always available, it was prudentially assumed that all the members of Council or Commissions were present at all meetings; emissions were rated at 0,150 g CO₂e per person per hour. Despite a likely overestimate of such source, the impact of virtual meetings on the overall IOF carbon budget was negligible, a mere 0,20% of the total.

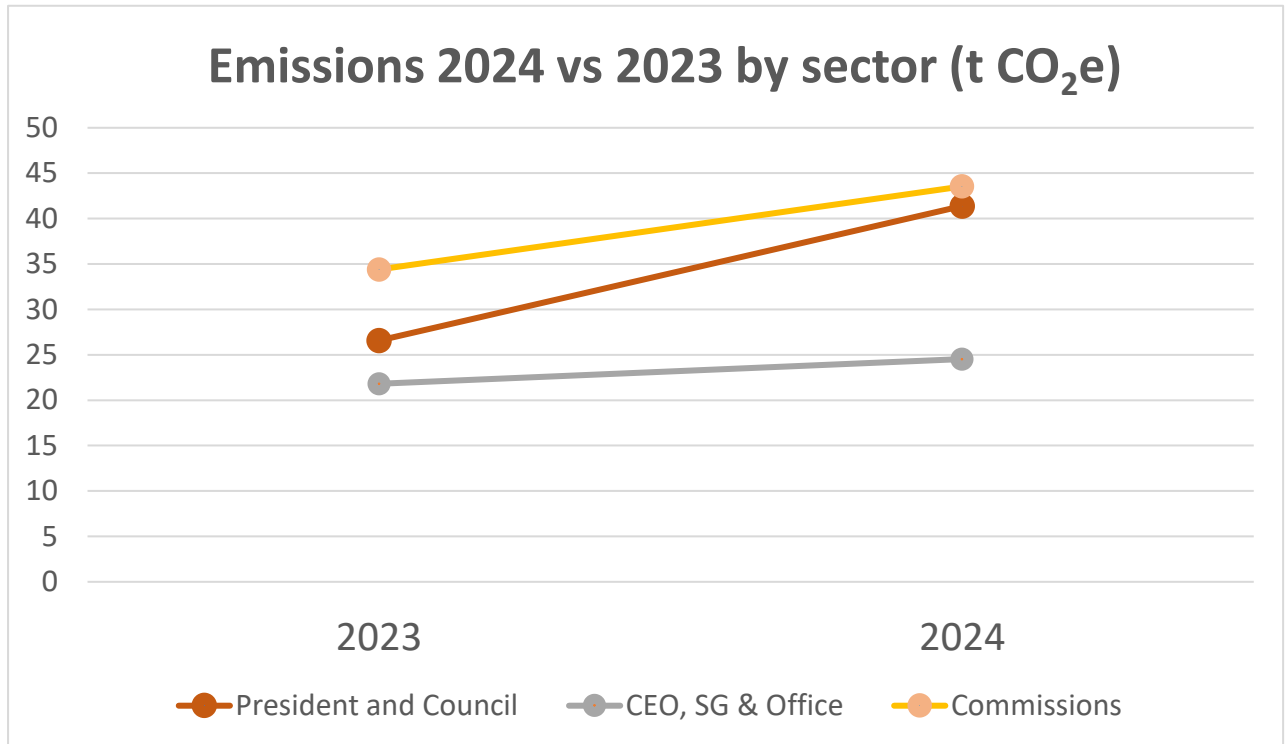
The emissions related to the functioning of the Office (excluding staff commuting) represented only 0,9% of total emissions, down from 1.2% of last year. As already mentioned in the report for the year 2023, the physical Office in Karlstad had been closed at the end of 2022. The emissions reported in the carbon budget are only due to residual “amortisation” of equipment-related emissions that had been spread over their entire lifetime.

Staff commuting was kept as a category in order to make a comparison with previous years easier. It amounts to a very low figure because public transport was the normal choice and, when personal cars were used, they were always full electric cars.

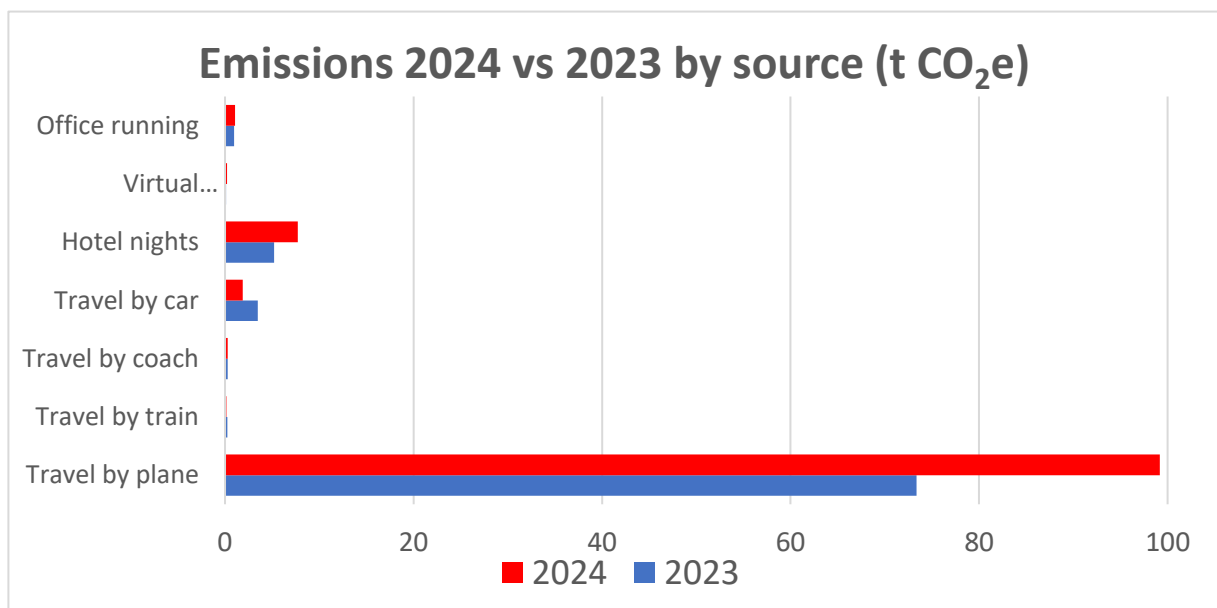
A comparison of 2023 and 2024

As mentioned before, the emissions of 2024 were 32% higher than those of 2023

As far as sectors are concerned, the highest relative increment was that of “President and Council”, followed by “Commissions”, while the increment of the “Office, CEO and Secretary General” was only marginal.



As for the sources of emissions, the main increment of 2024 vs 2023 are registered in flights, with a corresponding increment in hotel accommodations, reflecting a higher number and more distant destinations in events requiring the presence of IOF representatives.



Compensation of non-avoided emissions

The emissions of 2019 were offset by Dow (<https://corporate.dow.com/en-us/>) as the IOF carbon budget for 2019 had been selected for the IOC and Dow "Carbon Initiative Award".

The non-avoided GHG emissions 2021 have been fully offset by the IOC through a portfolio of ICROA-compliant GHG projects as the IOF carbon budget for 2021 had been selected for the IOC "Carbon Action Award".

As for 2022 and 2023 the emissions of 2024 were not offset by the purchase of carbon credits due to the ongoing debate over the reliability of many compensation projects. A discussion is open within the IOF, in order to find suitable third-party certified programmes or alternative initiatives, most likely in the areas of afforestation or reforestation, in line with its strong relationships with forests for the very performance of the sport of orienteering.

A look into the future

The carbon emissions of the IOF are directly proportional to its activities. After the Covid-19 outbreak, which provoked a severe limitation to international travels, and subsequently to international orienteering events, there was a gradual return to normal in 2022 and 2023, which continued in 2024, with a complete set of international competitions. This caused, for these three years in a row, an increase of carbon emissions compared to the absolute low of 2021.

Another aspect to be considered is that some contingency factors are reflected in the emissions. For example, the World Games (Chengdu, China, 2025) required two preparatory long-distance trips; moreover, the 2024 Council elections brought in the governing body of the IOF another non-European member, and this too was reflected in air-travel emissions.

However, the ambition of the Federation is to make Orienteering a global sport and many efforts are dedicated to supporting the spread and the growth of the sport in other continents, from the past and current centre of gravity in Europe, where the sport originated many decades ago. This development is clearly desirable for the future of orienteering worldwide.

The effort of the IOF to become a really global sport is also reflected in the "business" trips of the Global Development Commission and of individual IOF representatives in other continents with a view to supporting the technical growth of nascent orienteering movements.

The main attention of the IOF, therefore, rather than on the absolute amount of emissions, will be focused on maintaining, and possibly decreasing, the "carbon intensity" of its activities.

Methodological notes

This chapter is an almost verbatim replica of the same part of the 2023 report. The methodology did not change over the years, so that year-to-year positive or negative differences could be better appreciated.

Guiding principles

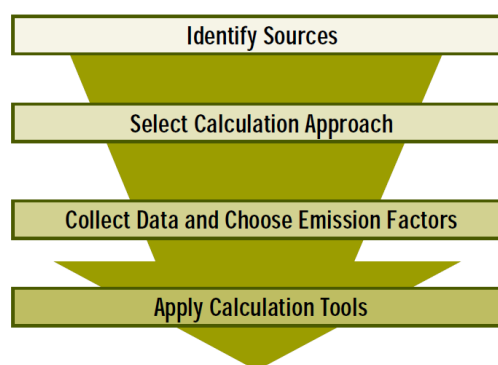
- **Relevance** – The accounting represents to the best of our abilities, all the sources of GHG that are related to the activity of the IOF and are the most useful references for an improvement pathway.
- **Completeness** – All available data were included and, for the few cases where reliable data were not available, best estimates and appropriate explanation thereof were given.
- **Consistency** – As in previous years most emission factors are derived from the “Greenhouse gas reporting: conversion factors 2023” published by the Department for Energy Security and Net Zero of the UK Government, 8 July 2024⁴ (updated 30 October 2024), as was done in 2019 (the baseline year), 2020, 2021, 2022 and 2024. In this report we shall refer to it as the “DEFRA database”, as it was initially developed by the Department for Environment, Food & Rural Affairs.
- **Transparency** – Raw and summary data provided by the Office are based on actual reports, invoices, travel documents etc. Where a best estimate was necessary, the criteria were made explicit.
- **Accuracy** – Every reasonable effort was done to obtain data at the most granular level; in order to remain on the safe side and avoid the risk of under-representation of emissions, **all estimates were increased by 10%.**

Process description

We followed the stepwise approach suggested by the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard, Revised Edition (WRI and WBCSD, 2004⁵), pp. 40-45)

⁴ https://assets.publishing.service.gov.uk/media/6722567487df31a87d8c497e/ghg-conversion-factors-2024-full_set_for_advanced_users_v1_1.xlsx

⁵ : <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>



... excluding the fifth step (Roll-up Data to Corporate Level) as non-applicable to the IOF.

Identification of sources

Scope 1 – As of 1 January 2023, the IOF closed its office in Karlstad, Sweden, whose emissions had been reported until 2022. Staff members now work from home and meet occasionally. Such trips, in order to keep a similar structure as in previous years, was reported as “staff commuting”. The IOF does not own a car fleet. Therefore “Scope 1” emissions is nil.

Scope 2 – For the same reasons, no energy or heat are bought by the IOF, which brings also “Scope 2” emissions to zero.

Scope 3 – All emissions, therefore, are classified as “Scope 3”. The lion’s share is represented by business travels of Office staff, the President, CEO and Secretary General and members of the IOF Council and Commissions. Staff commuting, as mentioned before, is included here.

Calculation approach and Data collection

Reporting is based on the most reliable data available.

Travel reporting is based on a detailed record keeping of individual business travels (km, means of transportation), generally, but not always, including car type and fuel type. Where detailed data were not available prudential estimates were adopted. The most detailed emission factor compatible with the level of information available was used.

As for commuters’ travels (people working for the IOF Office), distances were calculated for each employee (home-office, return) who produced details on car type and fuel: emission factors per km were therefore calculated with the highest possible detail.

- Business trips of President, Council members, CEO, Secretary General, Office staff and Commission members could reach the detail of transportation means (airplane, train, coach, car) and the number of km per means and trip. Travel which combined IOF business and other activities was assessed on a pro-rata basis according to the estimated proportion of the trip devoted to IOF business.
- Flights: European flights, all in Economy class, were calculated as "short haul"; outside Europe "long haul". No national flights were reported.

- Train: National or International rail emission factors were used according to the trip concerned.
- Coach: Local bus or Coach emission factors were used according to the trip concerned.
- Car: Emission factors used depended on the degree of detail of information available. E.g. in case of staff commuting, where fuel type and segment were known, specific fuel/segment emission data were used. On the opposite, in case of Council or Commission members' trips, average car emissions were used, as distances but not car types had been recorded.
- Hotel nights: most destinations were concentrated in Europe; as the DEFRA database is missing a significant number of European destinations, a case by case (country-specific) emission factor was used when available and an average emission factor for European destinations (12.28 kg CO₂e/night) was applied otherwise. Outside Europe, country-specific emission factors were used when available (e.g. Thailand); data for neighbouring destinations were employed where country-specific data were missing.

Calculation tool

All data were processed with a MS Excel Spreadsheet.

References

- Department for Energy Security and Net Zero, 2024. Greenhouse gas reporting: conversion factors 2024, 8 July 2023 (updated 30 October 2024). https://assets.publishing.service.gov.uk/media/6722567487df31a87d8c497e/ghg-conversion-factors-2024-full_set_for_advanced_users_v1_1.xlsx.
- IOC, 2018. Sports for Climate Action (Sustainability Essentials). <https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/IOC/What-We-Do/celebrate-olympic-games/Sustainability/sustainability-essentials/SUSTAINABILITY-ESSENTIALS-IS-SUE-2.pdf>
- WRI and WBCSD, 2004. The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition). World Resources Institute and World Business Council for Sustainable Development. ISBN 1-56973-568-9. <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>.
- WRI and WBCSD, 2013. Technical Guidance for Calculating Scope 3 Emissions (version 1.0) - Supplement to the Corporate Value Chain (Scope 3) Accounting & Reporting Standard. https://ghgprotocol.org/sites/default/files/standards/Scope3_Calculation_Guidance_0.pdf

Annex – Summary data: CO₂e emissions 2024

	km; n; h	CO ₂ e kg	+10%	Final estimate
President and Council				
Travel by plane	177158	34024,99	3.402,50	37.427,49
Travel by train	6580	29,35	2,93	32,28
Travel by coach	1415	38,45	3,84	42,29
Travel by car	6225	1057,25	105,73	1.162,98
Hotel nights	163	2412,78	241,28	2.654,06
Virtual meeting (h*p)	383	57,38	5,74	63,11
Subtotal		37620,20	3.762,02	41.382,22
CEO, SG, Office staff				
Staff commuting				
Travel by plane	0	0,00	0,00	0,00
Travel by train	1800	63,83	6,38	70,21
Travel by coach	2320	154,08	15,41	169,49
Travel by car	1170	51,56	5,16	56,72
Subtotal commuting		269,47	26,95	296,42
Business trips				
Travel by plane	113697	19772,21	1.977,22	21.749,43
Travel by train	11638	51,91	5,19	57,10
Travel by coach	1334	36,24	3,62	39,87
Travel by car	1743	296,03	29,60	325,63
Hotel nights	166	1873,48	187,35	2.060,82
Subtotal trips		22029,86	2.202,99	24.232,85
Subtotal Office		22299,33	2.229,93	24.529,27
Commissions				
Travel by plane	194210	36362,98	3.636,30	39.999,27
Travel by train	200	0,89	0,09	0,98
Travel by coach	1054	28,64	2,86	31,50
Travel by car	1730	293,82	29,38	323,21
Hotel nights	183	2745,40	274,54	3.019,94
Virtual meeting (h*p)	1006	150,90	15,09	165,99
Subtotal		39582,63	3.958,26	43.540,89
Office running		972,50	97,25	1.069,75
Grand total		100474,66	10.047,47	110.522,13

	km; n; h	CO2e kg	+10%	Final estimate
Summary by source				
Travel by plane	485065	90160,18	9.016,02	99.176,20
Travel by train	20218	145,97	14,60	160,57
Travel by coach	6123	257,41	25,74	283,15
Travel by car	10868	1698,67	169,87	1.868,54
Hotel nights	512	7031,66	703,17	7.734,82
Virtual meeting (h*p)	1389	208,28	20,83	229,10
Office running		972,50	97,25	1.069,75
Grand total		100474,66	10.047,47	110.522,13



INTERNATIONAL ORIENTEERING FEDERATION