FIS CO_2 calculator – Short Methodological Guide

INTRODUCTION

In order to assist FIS member associations and FIS event's organisers in taking the lead on change rather than just being spectators, we made a significant and long-term investment in the creation of the FIS CO_2 Calculator, available for free to all ski and snowboard World Cup and Championship local organisers (LOCs) and the National Ski Association (NSAs) as their first step on the road to reduction: FIS CO_2 Calculator

To further assist ski and snowboard NSAs and LOCs in taking their first steps in calculating their CO_2 emissions, we have created this Short Methodological Guide.
The operations of ski and snowboard NSAs and LOCs inevitably result in carbon emissions. FIS, in collaboration with Green Producers Tool (GPT), has identified the main factors to consider when assessing the carbon impact of ski and snowboard organisations.

FIS' role

As part of its IMPACT Programme, FIS is committed to contributing to environmental preservation and regeneration, leveraging the power of ski and snowboard to raise awareness and catalyse action.
As part of its efforts to rally international ski and snowboard stakeholders behind the climate agenda, FIS has invested in the development of the FIS CO_2 Calculator tool.
The methodology behind the tool has been developed by GPT and is derived from the Greenhouse Gas (GHG) Protocol, the most widely used international accounting standard to measure and report greenhouse gas emissions.

THE INTERNATIONAL FRAMEWORK

Greenhouse gases

The term "carbon footprint" can be misleading, as a proper carbon footprint includes gases other than carbon dioxide, including some gases which do not contain any carbon atoms. These are "greenhouse gases", so-called because of their role in absorbing and emitting thermal radiation in the atmosphere. A more correct term is "GHG inventory". The list of greenhouse gases is provided by the IPCC Fifth assessment report.

Most greenhouse gases are naturally present in the atmosphere but their concentrations have increased since the industrial revolution through man-made processes, to levels threatening

the stability of climate patterns, hence the common terms “global warming” and “climate change”.

The main source of emissions is the combustion of fossil fuels (oil, coal and natural gas). Agriculture, deforestation and refrigerant fluid leaks are also important sources.
Each greenhouse gas is characterised by its global warming potential (GWP), which is determined by the greenhouse effect and its lifetime in the atmosphere. Since carbon dioxide (CO_2) is by far the main contributor to global warming – about 75% – the global warming potential of greenhouse gases are measured relative to the mass of CO_2, and are thus expressed as CO_2 equivalent (CO_2 eq).
The tool provides you the final data in kg CO_2 eq or t CO2 eq (tonnes CO_2 equivalent).

Carbon footprint
A carbon footprint, or a greenhouse gas (GHG) inventory, maps the GHG emissions of an organisation, a service or a product, applying the life cycle approach. It can be calculated by performing (according to international standards) a life-cycle assessment (LCA) with a focus on GHG emissions. The LCA approach is used to evaluate the impacts associated with products, organisations and services over their life-cycles, from the extraction of raw materials, through transportation, production, distribution, use and end-of-life treatment. These different steps are called “life cycle stages”.

Scopes
Understanding and articulating the scope of direct influence is crucial to achieving carbon reduction.

• Scope 1: Direct emissions
The organisation must declare under Scope 1 whether it has direct control over power generation or uses fossil fuels in its operations. Direct GHG emissions come from sources the company owns or controls, such as combustion in owned or controlled boilers, furnaces and cars.

• Scope 2: Emissions from purchased electricity, heat, and steam
When an organisation consumes energy, it is required to report the emissions associated with that consumption under Scope 2. The scope of emissions is generally simple to identify, often using meters or invoices as a guide. Indirect GHG emissions can result from the organisation’s use of purchased electricity in its own or controlled equipment or processes.
Despite the fact that Scope 2 emissions (bought power) are generated off-site by utility providers, they are considered part of a organisation’s operating footprint and must be accounted. Market-based Scope 2 calculations are a great way to highlight where you might be

able to operate in a more environmentally friendly manner than the grid currently allows (e.g., power purchase agreements).

• Scope 3: Other indirect/supply chain emissions

When it comes to Scope 3 emissions, reporting is still considered optional. These emissions are a result of the organisation's activity, but they come from sources that the company does not own or control, such as supplier activities.

Organisations will almost certainly be required to conduct a lifecycle study and identify the complete supply chain in order to determine the scope of emissions related with their operations.

Extraction and manufacturing of purchased materials, transportation of purchased fuels, and use of sold products and services are all instances of Scope 3 activities. Scope 3 can also account for leased assets, outsourcing, and franchising, which are supply chain emissions that look both upstream and downstream.

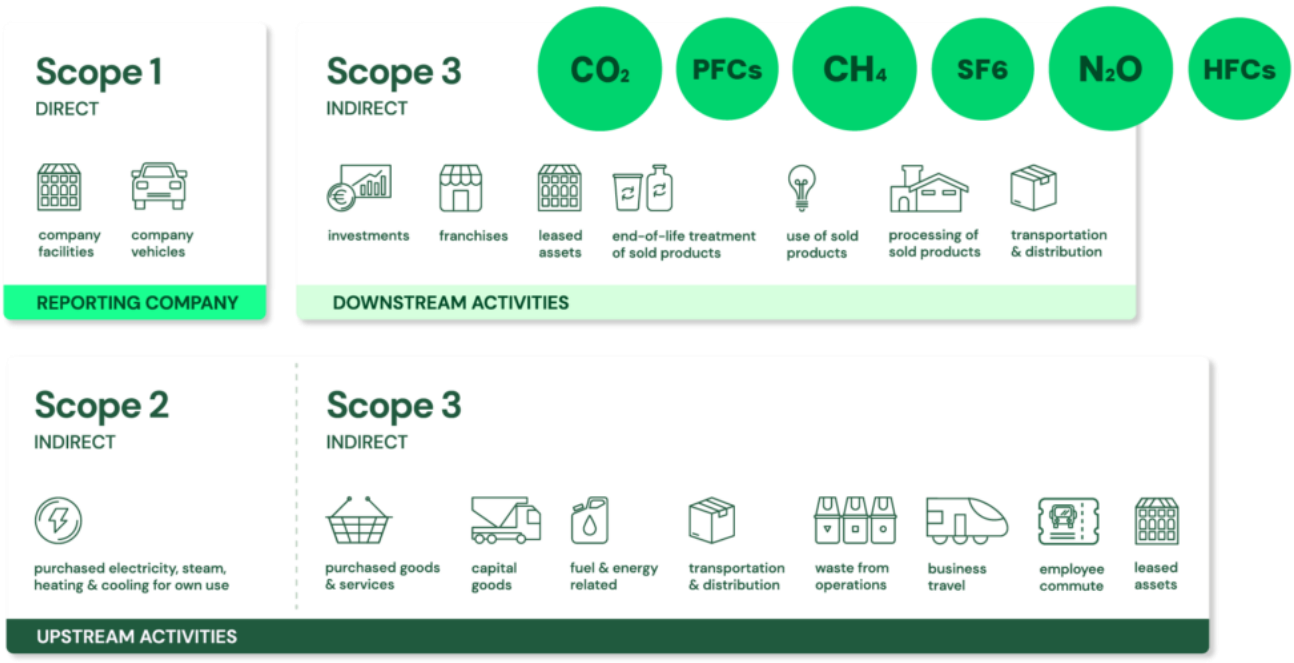

FIGURE 1 – SCOPES

Compliance with internationally recognised standards

The Carbon Footprint calculation is an internationally recognised methodology and various standards exist for the application of these methodologies to products, services or organisations. The methodology proposed in this Guide is inspired by and consistent with three existing international standards: the GHG Protocol, ISO 14064 and the European Commission's Organisation Environmental Footprint (OEF). These widely used standards and principles are aimed at guiding the carbon footprint calculation of organisations. These principles are explained here:

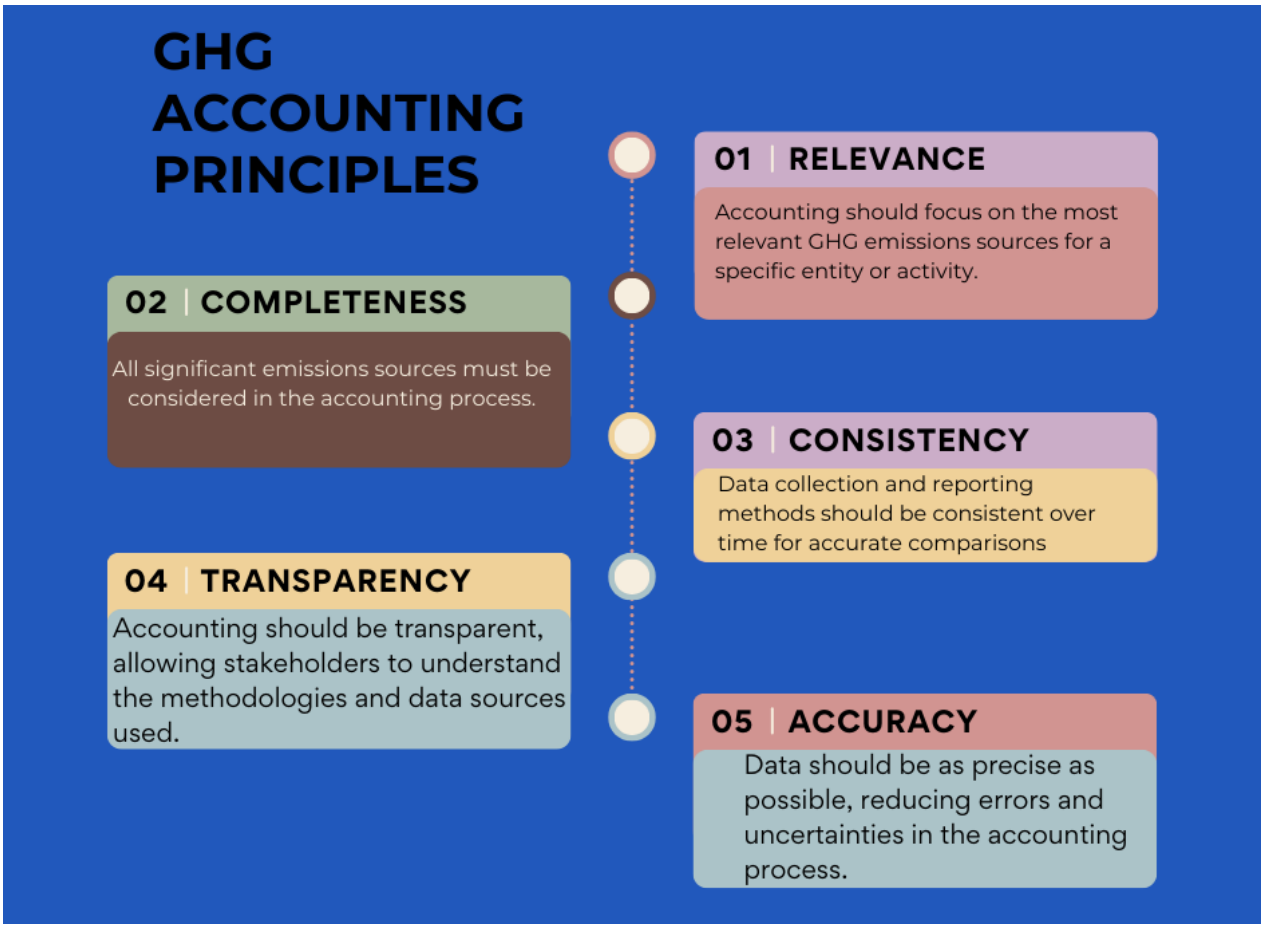

FIGURE 2 – GHG ACCOUNTING PRINCIPLES

CARBON ACCOUNTING METHODOLOGY – WHAT DO WE NEED TO MEASURE, AND HOW?

The methodology offers tailored guidance in a ski and snowboard context for measuring and reporting carbon emissions in accordance with recognised standards.

Applying this methodology allows ski and snowboard organisations to:

- act in advance: the tool is designed to help in the plan phase of the event by being able to compare different options for the same activity. The tool makes it possible to compare different options (e.g. different means of transport, different merchandising fabrics, different types of menus, etc.) and figure out the most advantageous one to reduce the associated CO_2 – see figure #4;
- measure, manage and disclose GHG emissions based on a single, approved framework;
- simplify and reduce the cost of compiling a GHG inventory by leveraging collective investments;
- improve the consistency and transparency of reported information, making it easier to track and compare progress over time;
- respond to voluntary reporting frameworks, fulfilling the expectations of stakeholders (civil society, fans, media, partners) and satisfying forthcoming sustainability reporting regulations;
- gathering input to develop a data-driven strategy to manage and reduce GHG emissions.

To gain a deeper insight into the innovative operational approach of the FIS CO_2 Calculator, please refer to Figures 3 and 4 below. Figure 3 illustrates the conventional methodology utilised in the traditional CO_2 calculation tools, whereas Figure 4 outlines the pioneering strategy that has been adopted with the FIS CO2 Calculator.

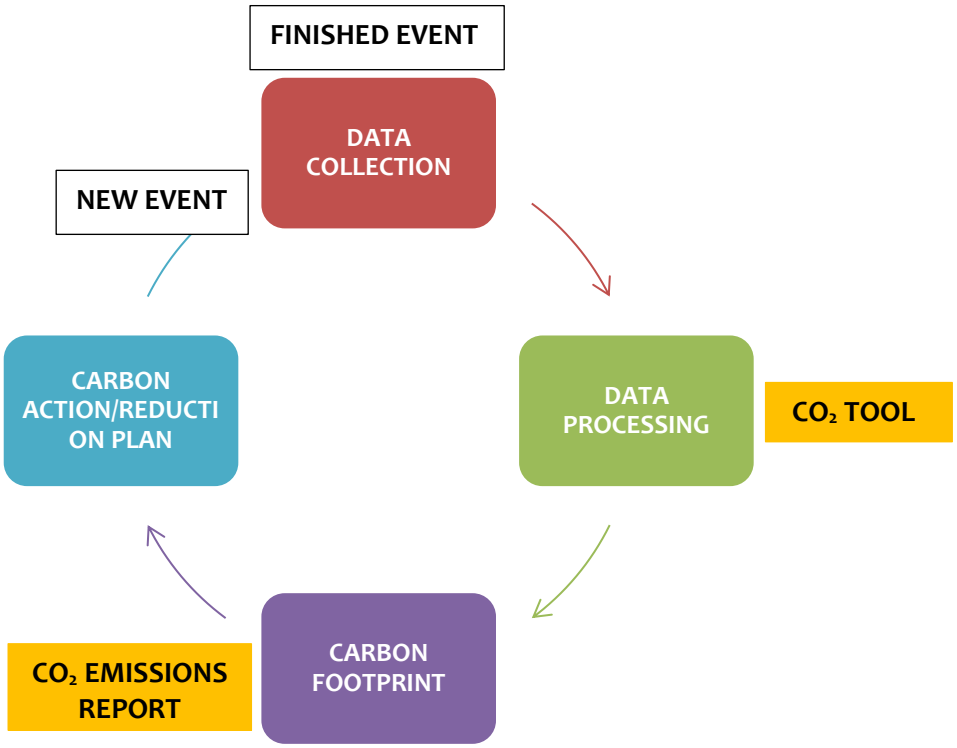

FIGURE 3 – TRADITIONAL CO_2 CALCULATION AND REDUCTION SCHEME

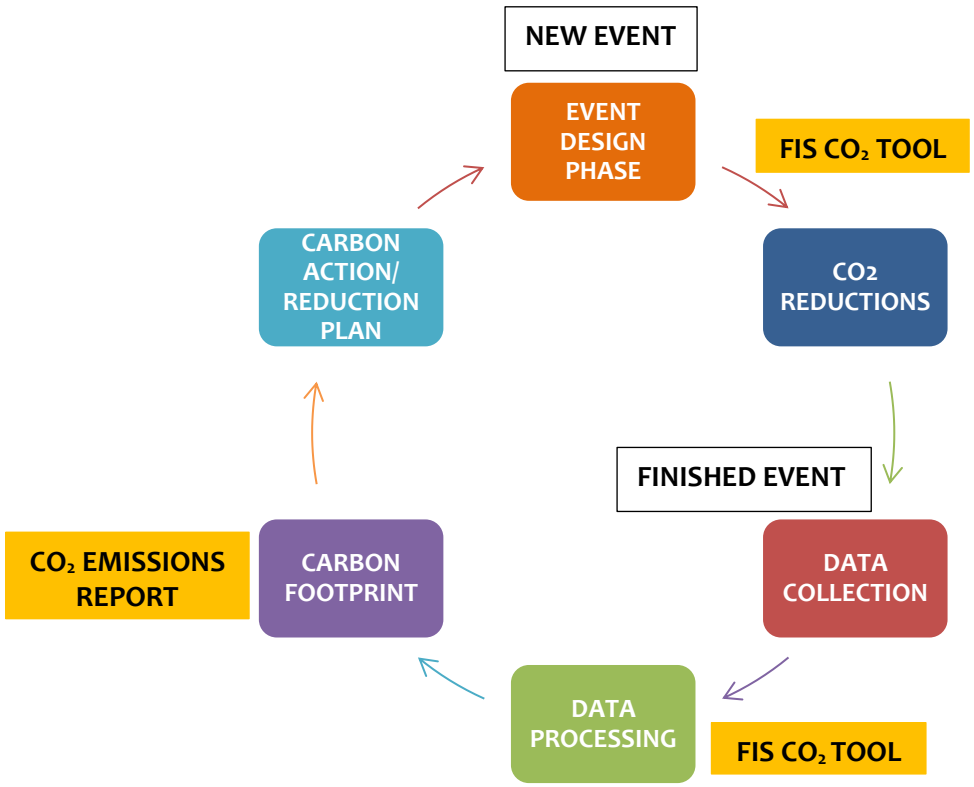

FIGURE 4 – FIS INNOVATIVE CO_2 CALCULATION AND REDUCTION SCHEME

Steps

1. Measure

The carbon footprint consists of measuring GHG emissions of the organisation, service or product being assessed: it produces a robust quantitative evaluation of a key aspect of the environmental impacts. This step is divided into data collection and data calculation:

- Data collection
  The data and information related to the organisation, product or service being studied are collected from different sources. Typical data to collect include raw materials used, water and energy consumption, transportation modes and distances, waste generation and treatment.

- Data processing and calculation
  The data collected in the previous step are "translated" to GHG emissions, based on emission factors, GHG emissions per unit of input (e.g., expressed in kg CO_2 - eq/unit of input). These factors are usually available in different databases.The data translated to GHG emissions using the emission factors can be summed up, and the results of the carbon footprint is expressed in kg CO_2 -eq or tonne CO_2 -eq.

2. Understand

This measurement is necessary to evaluate the overall climate impacts of the organisation, service or product, and to understand which activities contribute most to these impacts, which activities contribute less, and which parameters influence the impacts of these different activities.

3. Take Action and create a Carbon action/reduction Plan

Understanding the most significant activities is crucial to guide decision-makers to take actions that reduce greenhouse gas emissions. The first priority should be to focus on the activities that contribute most to the carbon footprint which should therefore be part of a Carbon action/reduction plan. The potential effectiveness of reduction measures can also be assessed using the FIS CO_2 calculation tool in the 'estimate/budget' function. This will help you select the most cost-effective actions with the highest reduction potential. Measuring your global GHG emissions is also essential to set science-based targets and join global efforts to reduce GHG emissions worldwide and align with a 2°C global warming scenario, as outlined in the Paris Agreement on Climate Change.

Reporting Period and Baseline

For LOCS the overall recommendation is to select the ski and snowboard season, July–June, for the reporting period. However, organisations can select a different reporting period.

Some of the criteria to consider are:

- alignment with the financial reporting year;
- alignment with the data collection and reporting cycle. For example, it may take a couple of months at the season's end to complete all activities and collect data.

For the NSAs it depends on how directly involved they are in organising sporting events during the season. If so, it is fine to apply the same approach as for the LOCs, otherwise the calendar year can also be used as the reporting period (as for the FIS as an organisation).

The organization should establish a base year for time boundaries, especially for NSAs and recurring events year after year that can be compared.

Base year: each organization should select an applicable measurement period to serve as the baseline for carbon reduction targets (e.g. Season 2024/25), but if there is data from previous seasons, a calculation can also be made from that data (e.g. Season 2023/24).

Reporting Approach

The 'operational control' concept is the first step to applied to the reporting process. NSAs and LOCs should use the 'operational control' approach to account for 100% of GHG emissions from activities over which they have control and primary data. Control implies having the full authority to introduce and implement operating policies.

In any case, even emissions defined as indirect over which there is no real control should be calculated following the categories shown in the FIS CO_2 calculator, especially all the purchases that are paid for by the organisation and on which therefore more sustainable criteria of the product/service can be demanded (through primary or secondary data)

Everything concerning spectators should also be included as far as possible using travel data collection methods that help to estimate with reasonable certainty the origins and means of transport.

In this case, two methods can be used that have worked well in the past in other events, the first is to link ticket sales (where there is one) to the request to share data such as the origin of the spectators and the means of transport used to reach the ski resort; the second is to equip a few volunteers with an electronic device (Ipad or smartphone) and position them at the entrance gates to reach a significant sample of spectators and collect enough data to be able to make reasonable estimates (secondary data).

Reporting Boundaries

The following table provides guidance on the types of data that should be considered within the operating boundary of the LOC or NSA. In general, if an organization pays for something, it also has ownership of it. As a result, the activity should be included in the CO_2 calculation.
A separate discussion is required for the travel aspect, which represents the largest proportion of an event's CO_2 emissions when all participants are taken into account.
This category of emissions should be calculated even if the cost does not fall under the LOC budget.
For spectators, an estimate should be made based on assumptions as close to reality as possible to calculate the emissions related to their travel. Please see the section above titled "Reporting Approach" for more information.
For LOCs, only the emissions of FIS staff and NSAs (including athletes and teams) should NOT be counted to avoid double counting.

Snow management CO_2 is produced during energy consumption and slopes preparation. The slopes are usually prepared primarily for normal snow sports activities. For the reporting of the event, only the activities that are additionally carried out for the preparation or maintenance of the snow-based competition and training infrastructure are relevant. SNOW PRODUCED ON TOP	**Event**	**NSAs**	**FIS**	**Other**
Type of snow production and m^3	X			
Use of Snow groomers and snow cats	X			
People transport To/from the venues and the hotels (inside the town and between the venues)	**Event**	**NSAs**	**FIS**	**Other**
Event staff	X			
Volunteers	X			
Spectators	X			
Sponsors / partner / VIP	X			
Media representatives	X			
NSAs employees	X			
FIS Officials	X			
FIS Sponsors	X			
Athletes	X			
Support teams (coaches, physios, service, etc.)	X			
Logistics transport Use of transportation for the implementation of the event (excluding arrival and departure, transport of people, preparation of slopes)	**Event**	**NSAs**	**FIS**	**Other**
Sports equipment (athletes / support teams)		X		
Transport of the temporary infrastructure for the event	X			
Transport of goods (including F&B)	X			
Material transport for sponsor and partner appearances				sponsors partners
Media materials				media

Accommodation (the rule is who pays for the night count the CO_2) Only the overnight stays that occurred directly in the context of the event are relevant.	**Event**	**NSAs**	**FIS**	**Other**
Event staff	X			
Volunteers	X			
Spectators	X			
Sponsors / partner	X			sponsors /partners if they pay for it
Media representatives	X			
NSAs employees		X		
FIS Officials			X	
Athletes		X		
Support teams (coaches, physios, service, etc.)		X		
Resources management - Waste disposal & Recycling Only waste generated directly in the context of the event (-> event site) is relevant. Waste that is generated, for example, in the context of side events not directly organised by the LOC is not taken into account.	**Event**	**NSAs**	**FIS**	**Other**
During the event and during event set-up/dismantling on the event site	X			
Waste generated by sponsorship and partner activities outside the event area				sponsors partners
Catering Only food consumed directly during the event (-> event site) and paid by the LOC is relevant. Meals, e.g. with sponsors on the evening before the competition, are not taken into account if the LOC does not pay for it.	**Event**	**NSAs**	**FIS**	**Other**
Event staff	X			
Volunteers	X			
Spectators	X			
Sponsors / partner	X			
Media representatives	X			
NSAs employees	X			
FIS Officials	X			
FIS Sponsors	X			
Athletes	X			
Support teams (coaches, physios, service, etc.)	X			
Energy (without snow management) Direct consumption (energy such as petrol, diesel, oil) and indirect consumption (electricity) – FOR THE EVENT (competition and training), ASSEMBLY AND DISMANTLING PHASE	**Event**	**NSAs**	**FIS**	**Other**
Electricity consumption	X			
Electricity consumption for ski-lifts	X			
Naturale gas consumption	X			
Fuel consumption for power units	X			
Water (without snow management) CO_2 is generally produced during water treatment, especially during hot water heating.	**Event**	**NSAs**	**FIS**	**Other**
Sanitary facilities + food&beverage	X			
Water consumption of snowmaking systems: - Before the event	X			

Snow depots				
Watering (ice slopes preparation)	X			
Materials Long transport routes and the choice of material have an impact on the CO_2 balance.	**Event**	**NSAs**	**FIS**	**Other**
Materials for event set-up and organization (paid by the LOC)	X			
Materials paid by sponsors / partners				sponsors partners
Materials paid by OBS/Media				Media
Clothing for event staff and volunteers	X			
Equipment athletes / support teams		X		
Equipment officials		X	X	
Merchandising	X			
Travels Arrival and departure cause a considerable part of the emissions, especially the motorised means of transport such as airplane, car or motorbike. Only the arrival and departure to/from the event location is looked at here.	**Event**	**NSAs**	**FIS**	**Other**
Event staff	X			
Volunteers	X			
Spectators	X			
Sponsors / partner	X			
Media representatives	X			
Suppliers	X			
NSAs employees		X		
FIS Officials			X	
FIS Sponsors			X	
Athletes		X		
Support teams (coaches, physios, service, etc.)		X		

Key element: data quality

Data collection is a critical element of delivering a high-quality carbon footprint. However, it is usually the most challenging aspect of the carbon footprint process.

The main difficulties identified are:

- Identify a sustainability account that can collect data and use the calculator tool, also by assigning data collection tasks that the calculator allows to be sent by email;

- It is not always easy to follow who is doing what and to maintain contact with data owners. The latter may change as individuals take on different responsibilities and increased workloads. It requires continual effort to ensure data collection is actually done and transmitted to the sustainability account;

- There will be many data sources from within the LOC/NSA and among external stakeholders responsible for key deliverables. A complex coordination plan must be put in place to ensure efficient exchange between all stakeholders;

- Data owners need to be well briefed on the requirements and data collection methods, to ensure that good quality data are obtained;

- The challenge for the sustainability account and the project manager is to be aware of new initiatives and identify potential carbon footprint implications. This requires proactive engagement across the organisation (and with partners) to minimise the risk of surprises; and

- Some data may not be shared due to confidentiality reasons.

It is not reasonable to expect to capture every item, or to be able to measure the LOC/NSA carbon footprint with total precision. However, with strong project management and data management processes in place, one can anticipate that the significant GHG emissions will be identified and measured.

The following elements can facilitate the data collection process and the data quality:

- Use the baseline carbon footprint to identify and characterise (e.g., type of data, units, timeline, data owner) as accurately as possible the data requested;

- Identify and connect with each person having access to the requested data, including external staff; this is the so-called data owner;

- Use the email feature to share part of the tool with interested functional areas and data owners;

- Educate data owners about the aim, need and methodology of carbon footprinting, in order to enhance proactivity and engagement, for example through workshops/training sessions;

- Carefully plan the monitoring and data collection: identify data owners, define responsibilities and deadlines, be reactive and offer support to data owners; and

- Apply the approach “learning by doing” by playing with the tool with the budget/estimate function.

FEEDBACK

As part of our commitment to continual improvement, we welcome feedback both from NSAs and LOCs who have utilised the Guide/FIS CO_2 Calculator and from subject-matter experts and other interested parties, with a view to improving future editions. Please feel free to send any questions and/or comments to sustainability@fis-ski.com.

TERMINOLOGY AND DEFINITIONS

Carbon footprint (Or GHG inventory)
The actual amount of GHG emissions of a given system/project/organisation

Carbon action/reduction plan
Based on the baseline carbon footprint, LOCs and NSAs defines and implements an action plan to minimise and mitigate the GHG emissions by implementing new choices, solutions or procedures

Data owner
Responsible persons within LOCs or NSAs or external organisations having access to data needed for the carbon footprint

Primary data
Data directly measured and collected by the LOCs or NSAs and its partners/suppliers. By definition, primary data have a high level of quality/certainty

Secondary data
Data that the LOCs or NSAs is unable to collect directly and that have to be estimated by other means (e.g. assumptions, literature review, case studies and expert judgement)