

Carbon Emissions Framework Methodology

This is how ecollective calculated the carbon footprint of our business.

Approach

The framework used to calculate the carbon emissions of businesses has been designed by ecollective. The aim of the framework is to measure the footprint to a high degree of accuracy taking into account every element of the business, the quantity, the geographic location, etc.

Ecollective has worked with many businesses to help them measure their carbon footprint as well as get the process peer-reviewed by prominent members and experts in this space.

The aim is to calculate a highly accurate carbon footprint per customer (or a similar metric) for the business that can be tracked year on year as improvements are made.

As with any carbon calculation, it's not perfect, but we believe that this framework is currently one of the most thorough and therefore the most accurate methods in use in the industry. If you are familiar with carbon calculations, you will be pleased to know we follow GHG Protocol guidance.

We are always open to questions and feedback. If you would like to get in touch, please contact info@ecollectivecarbon.com and copy in nordic@fiftydegreesnorth.com

Scope

This study measures the greenhouse gas emissions of the business. The areas in scope for this study include:

- Office emissions
- Working from home emissions
- Staff business travel (including accommodation)
- The website
- Virtual events
- Hosted in-person Events
- Staff commuting
- Trips
 - Accommodation
 - Transport
 - Activities
 - Food included
 - Misc

What's not Included

- Optional Extras
- Customer travel to Trips when not purchased through the business.
- Investments

Data

This study analyses primary data provided directly from suppliers, providers and the business through specific surveys relating to their business model. Where surveys are not fully completed by a supplier, relevant industry averages are provided by DEFRA and other sources. Any assumptions that are required to fill data gaps, will be detailed against the specific category to which it relates.

The data is updated yearly as carbon conversion factors improve with accuracy. As this is constantly being updated as new data becomes available, please contact ecollective for more details.



How we Measure

Nearly everything has a carbon footprint, so measuring the exact carbon footprint of a business could be a lifetime's work. With the climate crisis, we simply do not have the time. So we have made assumptions in order to measure the carbon footprint of everything that goes into a business and the product it sells.

This is normal practice in the carbon-calculating world, but at ecollective we go a step further than most. Many companies make too simple assumptions or use unreliable data, resulting in scores that are not as accurate as they could be.

For Scope 2 emissions we have followed the market-based method. When information or good quality data has not been available we have used location-based information as a proxy for the market-based method.

The devil is in the details

The below section is long, because of our level of accuracy. However, for us, this is so important as often the details are where we find the best next steps in order to reduce that carbon footprint. (The below section could be far longer as each bullet point could be expanded upon, we have kept it this way in order to make this document more digestible.)

Office

- We have included all emissions from the office and any working from home related emissions.
- Working from home emissions are based on estimated hours of work, estimated additional heating requirements due to working from home and the energy provider used. If the energy provider is unknown we will use a national average carbon intensity of electricity in said country in order to calculate.
- Electricity related emissions either in the office or at home are based on the number of kWh used over a period of time and the energy provider used. If the energy provider is unknown we use the national average carbon intensity of electricity in said country in order to calculate.
- Electricity related emissions are accounted for by calculating the total amount of electricity use over the reporting period as well as the electricity supplier. If the office is shared, a percentage of the emissions from the office and communal space is assigned to the business.
- Office emissions related to water consumption, gas, waste and food have all been taken into account. If the exact qualities of these are unknown we have used national averages so that they can be included in the calculation. These calculations can be updated as and when information on these items are known.
- Other scope 3 emissions such as transmission and distribution of electricity are assumed to be minimal and excluded from the scope.

Staff Business travel

- Business Travel has been taken into account and included. This covers all trips taken for work purposes.
- We have included the following transport types: plane, car, bus, train, ferry and a few more taken by employees.

- We have also included the carbon emissions related to accommodation used during a work trip.
- We have used emission factors provided by DEFRA to calculate the total emissions related to business travel on these transport types. Unless the exact car model is known or private jets have been used, in which case we have used data from elsewhere in order to improve the accuracy of the calculations.
- For distances covered by transport, we have assumed the employee has taken the shortest possible route unless specified.
- We encourage businesses to list as much historical business travel as possible as well as to provide context for the said trip as well as cost in order to help strategize areas for reduction.
- Emissions from car journeys will be calculated using the distance travelled, fuel type and type of vehicle used.
- Emissions will be calculated on distances travelled. For land based trips, these will be based on the 'fastest route' available as provided on [googlemaps.com](https://www.google.com/maps) unless stated otherwise.
- If vehicle type is unknown it's assumed cars will be petrol powered medium-sized (Audi A4, Volkswagen Passat, etc) cars (roughly 2.0 ltr engine) unless otherwise specified.
- Calculations can be updated as transport methods change towards greater use of low carbon vehicles.
- For train transfers, we have calculated emissions per seat based on the kilometres travelled for that route. All train journeys have been assigned the same emissions factor provided by DEFRA. The exception being for any underground tube trips included in the calculations.
- For flights, we have assumed all flights are taken in economy unless otherwise stated. If the exact class of travel is known, calculations are updated accordingly.
- All flights have been assumed to be direct unless otherwise stated. However, all commercial flights include a distance uplift of 8% to compensate for planes not flying using the most direct route (such as flying around international airspace and stacking).
- All flight emissions include radiative forcing and the emission factors are based on those released by DEFRA.
- For all aviation emissions, we include the indirect effects of non-CO2 emissions when reporting to capture the full climate impact of their flight. However, it should be noted that there is significant scientific uncertainty around the magnitude of the indirect effect of non-CO2 aviation emissions and it is an active area of research. (Emissions from aviation have both direct (CO2, CH4 and N2O) and indirect (non-CO2 emissions e.g. water vapour, contrails, NOx) climate change effects).

Accommodation

All accommodation carbon scores are based on kilograms of CO2e emitted per room per night.

- For properties that have not completed the collective survey, we applied a national average emission factor for this property until they complete the survey. This score will represent a higher than average value.
- In the future, we hope to send a survey to the most commonly used properties to gather more accurate information on the carbon footprint of an exact hotel. To do this we would include occupancy rates, all energy & fuel use, water usage, laundry requirements plus other factors that have a significant carbon footprint.
- The total calculation is based on the number of rooms used and the number of nights stayed at the property.

In-person events

- Events hosted by the business during the reporting period are included. In the calculations, we have included emissions related to all paid expenses by the business. This normally relates to the venue, accommodation, employee travel and meals. It is likely that emissions related to other people attending the event will be included if invited by the business. However, this would unlikely cover travel in most cases.
- If a venue is used multiple times we will require them to complete our venue carbon footprint survey. This helps us to know their carbon footprint per day when using the space.
- For venues that have not completed the survey, we applied a global average emission factor for this venue until they complete the survey. This estimate is based on the country it is located in, the size of the venue and the duration of the event.
- Other scope 3 emissions such as transmission and distribution of electricity are assumed to be minimal and excluded from the scope.

Virtual events

- For the purpose of the calculation, we have included the carbon emissions of virtual events (such as zoom). For virtual events hosted by the business, we have included the total emissions. For virtual events (such as webinars) attended by employees, we have excluded this from the study as the carbon footprint will be incredibly small.
- For virtual events, we calculate the carbon footprint by:

- The amount of electricity used per viewer is based on including electricity consumed by data transmission, data centres and the device itself that it is being viewed on.
- For the purposes of the calculation, we assume that all viewers are watching on a laptop. It is worth noting that the score accuracy can be improved if a clear breakdown of devices used is known. For example, watching on a phone would require less electricity and a large TV would require more.
- The carbon footprint of the electricity used is then based on the average electricity mix of the countries in which the event is being watched in. The carbon conversion factor of the electricity used is based on the latest figures published by IEA.
- The number of viewers and the average duration of the transmission are then combined to give a total carbon footprint of the virtual event.

The website

- Whilst a website will have a fairly small carbon footprint it is something nearly every business has and something that can go unnoticed. However, having a more efficient website not only has a smaller carbon footprint but will also perform better for your business. So whilst it isn't normal to include a website in this kind of work, we nearly always do.
- To calculate the entire carbon footprint of a website we take the site traffic over the course of the reporting period, and multiply this by the average size of the company website. The geographic location of visitors and whether their web host uses renewable energy is also taken into account to create a total carbon footprint.
- When the average page size of a website is unknown we take the page size of the homepage. To avoid this confusion, when we say 'page size' we mean "The data transferred over the wire when a web page is loaded".
- If the host is unknown we assume the website host does not use renewable energy.
- If the geographic location of the website visitors is unknown ecollective assumes it is either international or UK based depending on the business at hand. This helps us to calculate the carbon intensity of the electricity used.
- To measure the energy intensity of the web data an average value is used. Energy is used at the data centre, telecoms networks and by the end user's computer or mobile device so it can be very hard to include the measurement.

Post

- Post whilst it can seem minimal and not included by most businesses has been included in this study.
- Post can include information or packages to customers on products they have bought or marketing materials to encourage future purchases.
- The quantity of posts is normally calculated in weight, if this is unknown we used total spend as a gauge of annual quantity.
- Post is calculated by four different sections, material, printing, delivery and decomposition. For our calculations, we only include the carbon associated with the delivery.

Staff commuting

(Please note that in our 2019 and 2022 measurements we have not included staff commuting in our calculations, however this will be included from 2023 onwards and a summary of the approach is detailed below)

- Staff commuting whilst typically minimal and not included by most businesses have been included in this study.
- To avoid adding hours of admin for an item that will have a tiny carbon footprint. We have asked each employee to provide a summary of their yearly commute.
- Each employee's carbon footprint is then calculated based on the mode of transport, distance travelled and the frequency of the journey.
- We take into account the following types of transport, bus, coach, London Underground, motorbike or car.
- For car journeys, we also detail the car size and the fuel type (petrol, diesel, electric or hybrid). If the exact model is known we can use figures relating to this vehicle in order to improve the accuracy of the calculations.
- The carbon factors assigned to each mode of transport is based on those listed by DEFRA.
- For people who walk or bike, we assign them a zero carbon footprint for their commute.



Trips

This is where **the bulk of emissions lie**. As all trips (or known as 'tours' on the Fifty Degrees website) can be different, we have broken down the source of carbon emissions into different areas so we can calculate the emissions of each trip based on the itinerary, suppliers used and the number of inclusions.

Transport

- Transfers will be calculated per vehicle unless the vehicle is used on a shared basis in which case the CO₂e emissions will be calculated per seat.
- Emissions will be calculated on distances travelled. For land-based journeys, these will be based on the 'fastest route' available as provided on [googlemaps.com](https://www.google.com/maps) unless stated otherwise.
- Emissions from car journeys will be calculated using the distance travelled, fuel type and type of vehicle used.
- If vehicle type is unknown it's assumed cars will be petrol powered medium-sized (Audi A4, Volkswagen Passat, etc) cars (roughly 2.0 ltr engine) unless otherwise specified. If we know there will likely be a lot of passengers, the vehicle will be changed to either a minibus or a coach.
- Calculations can be updated as transport methods change towards greater use of low carbon vehicles.
- Some journeys will be one way but in reality, the vehicle will return to the point of origin after drop off. In these instances, we have included the total mileage of the vehicle and not the customer if this is known.
- For train transfers, we have calculated emissions per seat based on the kilometres travelled for that route. All train journeys have been assigned the same emissions factor provided by DEFRA.
- For ferry transfers, we have calculated emissions per seat based on the kilometres travelled for that route. All ferry journeys have been assigned the same emissions factor provided by DEFRA.
- For flights, we have assumed all flights are taken in economy unless otherwise stated. If the exact class of travel is known, calculations are updated accordingly.
- All flights have been assumed to be direct unless otherwise stated. However, all commercial flights include a distance uplift of 8% to compensate for planes not flying using the most direct route (such as flying around international airspace and stacking).
- All flight emissions include radiative forcing and the emission factors are based on those released by DEFRA.
- When private aviation is used the carbon footprint of this journey is calculated using the estimated burn rate of aviation fuel based on the type of aeroplane used. We then use the estimated distance travelled to calculate the number of carbon emissions of this journey.
- For private aviation, the total carbon footprint is based on the entire emissions of the aircraft rather than per seat as it is assumed to be for exclusive use. If it is known that the journey included an 'empty leg' then the emissions of this journey are included in the calculation. However, this is often unknown.
- For all aviation emissions, we include the indirect effects of non-CO₂ emissions when reporting to capture the full climate impact of their flight. However, it should be noted that there is significant scientific uncertainty around the magnitude of the indirect effect of non-CO₂ aviation emissions and it is an active area of research. (Emissions from aviation have both direct (CO₂, CH₄ and N₂O) and indirect (non-CO₂ emissions e.g. water vapour, contrails, NO_x) climate change effects.)

Accommodation

All accommodation carbon scores are based on kilograms of CO₂e emitted per room per night.

- We have emailed accommodation providers we have details for in order to ask them to complete our accommodation carbon footprint survey. This helps us to know their carbon footprint per room per night as opposed to using national averages.
- To calculate the carbon footprint per room per night we have included the following:
 - Hotel occupancy rates, hotels with relatively low or high occupancy rates during the time of the study will have a score that reflects an accurate per room carbon emission score. We know that a hotel with a 20% occupancy will have a lower energy requirement than the same hotel with 100% occupancy and have factored this into the calculation.

- To calculate the emissions, we have asked for all fuel and energy usage at the property. This includes electricity, gas, oil, petrol, diesel, wood, kerosene, Burning Oil, LPG and a few more. These quantities are then converted into their estimated carbon emissions based on conversion factors provided by DEFRA, with the exception of electricity.
- The carbon footprint of the electricity used at the accommodation is determined by the number of kWh used and the fuel mix of the energy provider. When the fuel mix of the energy provider is unknown, the national average fuel mix for that country is used.
- If exact quantities of the electricity or fuel amounts are unknown we have applied average fuel and electricity rates for hotels within that country to calculate the total emissions per room.
- We have assumed that energy requirements remain the same throughout the year and that the carbon emission per room in the summer is the same as in the winter. We have asked for annual energy usage when possible in order to average this out.
- When primary data is half completed we have used a mixture of primary data and secondary data to calculate the total score. For example, if a supplier has provided us with electricity data but no gas data as it is unknown. We have calculated the emissions from their electricity and applied the industry average emissions from gas use based on their property type.
- There are additional questions asked to the properties covering food, water, and outsourced tasks to get a better understanding of their total emissions. However, due to time constraints, these will be classified as estimates. The hope is that year on year, our calculations will get more accurate as we collect more information.
- For hotels that have not completed the survey, we applied a national average emission factor for this hotel until they complete the survey.
- If the quality of the hotel is unknown, we assume it is a 5 or 4-star hotel as these hotels tend to have a higher average carbon footprint per room per night than hotels of a lesser standard.
- When accommodation has been on a cruise, the carbon footprint has been calculated in a similar method but with a cruise-specific survey. This survey will focus on fuel and electricity used onboard for the duration of the itinerary.
- The total calculation is based on the number of rooms used and the number of nights stayed at the property.

Activities

- Any activities not booked and offered directly by the travel company are not included.
- Activities are measured on a per-person basis unless it's a private group experience in which case we measure the total emissions of the experience.
- We have included all associated emissions created by completing the experience, including transport to and from the starting point.
- Most carbon emissions relating to activities come from fuel such as petrol or diesel. We calculate the fuel needed to complete the activity and convert this into kg of CO₂e using DEFRA conversion factors.
- Some activities such as visiting a museum will have a small carbon footprint from the heating and electricity of the building itself. The framework has been designed to take these small footprints into account but they will be given a global average footprint due to the lack of available information and projected size of the emissions per person per visit.
- Similarly, activities that are incredibly similar in their offering have been assigned the same score across different suppliers due to their relatively low carbon footprint and the variation between different suppliers being minimal. For example, 30 minutes of quad biking in one location has been given the same carbon footprint as 30 minutes of quad biking somewhere else.
- Any transport or meals included in the activity will have been calculated using the same method as other transport and meals.
- Any emissions relating to the activity provider's employees or HQ have not been included in the calculation. We have only included the emissions related to the completion of the activity.

Food

- The lifecycle of producing a meal involves a complex supply chain with various different and disparate processes, manufacturers and suppliers and involves a number of major steps before the food enters the premises where the meal is made. These steps include land use, farming, animal feed, processing, waste disposal, transport, packaging and retail. There is also a high level of variability in the dietary choices of consumers and the data available is not yet sophisticated enough to go to this level of granularity.
- We have therefore categorised meals into 10+ categories such as high meat, medium meat, low meat, vegetarian and vegan with a carbon footprint attached to each.
- Where data on the meal or food provided is unknown, we have applied the highest-scoring emissions (high-meat meal) factor for food.

- We have assumed every meal included in the itinerary is eaten by the customer and have also included food for the guides unless stated otherwise.
- Occasional snacks and drinks have not been included as this is deemed too small to include at this stage.

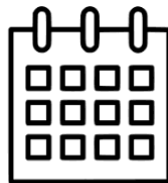
What is not included:

Investments

- The carbon footprint associated with any investments in the reporting year, not already included in scope 1 or scope 2 has not been included.
- At the time of typing, the current GHG Protocol, states certain types of investments or sponsorships should be calculated in different methods with different priority levels. Emissions from investments should be allocated to the reporting based on the reporting organization's proportional share of investment in the investee. For example, if you own 20+% of another company, this would be a high priority for inclusion.

Everything Else

- Supply chain (Scope 3) emissions are difficult to quantify, as there is mathematically no limit to the number of pathways that can contribute to total green house gas (GHG) emissions. Increased complexity as the supply chain grows leads to a level of uncertainty associated with emissions metrics, which has been used as justification by many organizations to pay little attention to or ignore supply chain emissions. Achieving 'good enough' and incorporating sufficiently meaningful information into emissions calculations is essential for effective and targeted emissions management.
- The aim of this methodology is to look at what we can influence and improve year over year. At the end of the day, we want to spend our time perfecting our reduction strategies rather than our measurements.
- However, the business is heavily encouraged to start measuring the carbon footprint of the hotels it supplies to its customers in the near future, as this will be a large part of its total carbon footprint and an area in which significant changes can be made to decarbonise the business.



Reporting Period

The reporting period is from 1st Jan - 31st December of each year.

The study was started in 2022 (using 2019 data) but has been designed to improve year on year with an improvement in the quality and quantity of data. Both primary and secondary data will be collected on an ongoing basis to improve the quality of the results.

The carbon calculating tool is easy to update with changes. This results in the accurate tracking of improvements year on year based on the same metrics.

The conversion factors and other industry data are updated annually by ecollective to improve the accuracy of the calculations.

The long term aim for ecollective projects is to not only reduce the carbon footprint of companies but improve the quality of the measurement process allowing companies to make smarter decisions when it comes to redesigning emissions out of their business.

This means that this methodology will likely change over time as better quality measurements and data become available. Please bear this in mind as calculations may be improved before this document is updated. This methodology is more of a guide to how we have calculated, rather than the exact detail of the formula

used on every single item we included in the project. If we did that, this document would likely be longer than Apple's T&Cs.

Recommendations and Limitations

The aim of this work is to give an accurate picture of the carbon emissions per customer. However, it is agreed and understood that emissions will not be 100% accurate due to time constraints and the lack of data on suppliers. What is exciting about this approach is that it is well-received by suppliers and gives us the opportunity to increase the accuracy of the carbon footprint.

The aim of any business should be to reduce its carbon footprint per employee (or another similar metric) as well as increase the quality of the data it has on its operations and suppliers.

If we are being realistic, there is no shortage of areas to improve the score but they all come with a balance of finding improvements that are time-sensitive, based on good data and will make a tangible difference. Below is a snapshot of some we are actively working on at the moment.

Some areas for improvement in future calculations:

- Increase the accuracy of data available on tailor-made packages.
- Increase the percentage of primary data available for accommodation calculations.
- Increase the percentage of primary data available for cruise calculations.

Feedback

A review process has been put in place to make sure that improvements can be made to the framework based on new research and user feedback. If improvements can be made to increase the accuracy as well as the user process, these changes will be actioned. For feedback on the framework or to share ideas, please contact info@ecollectivetravel.com and copy in nordic@fiftydegreesnorth.com