Carbon Emissions Framework Methodology

This is how we calculate the carbon footprint of Trek Travel.

Approach

The framework used to calculate the carbon emissions of Trek Travel has been designed by ecollective. The aim of the framework is to measure the company's carbon footprint to a high degree of accuracy, taking into account every element of the business.

ecollective has worked with many businesses to help them measure their carbon footprint.

The aim is to calculate a highly accurate carbon footprint for the business per customer (or a similar metric) 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

What's included

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

- Office emissions
- Working from home emissions
- Staff business travel (including accommodation)
- Website
- Virtual events
- Hosted in-person events
- Staff commuting
- Merchandise
- Purchased Goods
- Customer trips
    - Accommodation
    - Transport
    - Activities
    - Food
    - Guides
    - Miscellaneous
    - Guide Houses
- Customer travel to the trips.

What's not included
- Optional extras

- Investments

Data

During the audit, we analysed the primary data provided directly by suppliers, providers and the business through specific surveys relating to their business model. Where surveys were not fully completed by a supplier, we relied on relevant industry averages provided by DEFRA and other trusted sources. Any assumptions that are required to fill data gaps, are detailed against the specific category to which it relates.

The data is updated 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 the running of the business and the products/services it sells.

This is normal practice in the carbon-calculating world, but at ecollective we go a step further than most. Many companies make assumptions that are too simple 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 detail

The below section is long, because of our level of accuracy. However, for us, this is so important as we often find ideas for carbon reduction in the details. The section below could be far longer (as each bullet point could be expanded upon). We have kept it concise in order to make this document more digestible.

What are scopes?

This is carbon jargon, it helps people understand which part of your carbon footprint you can directly fix.

Scope 1 - These are emissions from all the fuel that the company pays for. It is usually the petrol in your company car and/or the diesel in your onsite generator.

Scope 2 - Emissions from the electricity you pay for at your premises.

Scope 3 - Everything else that forms part of your company emissions. These are often things you cannot control but can influence (also known as 'indirect'). For example, if some of your team work from home, the electricity emissions from this activity will sit in scope 3. Website emissions, business

travel, your whole supply chain (we could go on) are all scope 3. For most businesses, this is by far the biggest proportion of their footprint.

It's mandatory to include scope 1 and 2 emissions in your reporting. Best practice is to include scope 3 emissions too.

Office

- We include 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 and the energy provider used. If the energy provider is unknown we use a national average carbon intensity of electricity in that 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 that country in order to calculate.
- 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 are all 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 typically included as well for offices or other buildings managed by the company.

Business travel

- Business travel is included. This covers all trips taken for work purposes.
- We include the following transport types: plane, car, bus, train, ferry and other less common forms of transport.
- We also include the carbon emissions related to accommodation used during work trips.
- We have used emission factors provided by DEFRA to calculate the total emissions related to business travel on the transport types mentioned above 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 assume the employee has taken the shortest possible route unless otherwise specified.
- We encourage businesses to list as much historical business travel as possible to provide context, together with the cost associated, in order to help identify areas for reduction.
- Emissions from car journeys are calculated using the distance travelled, fuel type and type of vehicle used.
- Emissions are calculated on distances travelled. For land based trips, these are based on the 'fastest route' available as provided on googlemaps.com unless stated otherwise.
- If vehicle type is unknown we assume cars are petrol powered medium-sized (Audi A4, Volkswagen Passat, etc) cars (roughly 2.0l engine) unless otherwise specified.
- We can update calculations as transport methods change towards greater use of low carbon vehicles.
- For train travel, we calculate emissions per seat based on the kilometres travelled for that route. All train journeys are assigned the same emissions factor provided by DEFRA. The exception being for any underground tube trips included in the calculations.

- For flights, we assume all flights are taken in economy unless otherwise stated. If the exact class of travel is known, calculations are updated accordingly.
- All flights are assumed to be direct unless otherwise stated. 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. For information missions from aviation have both direct (CO2, CH4 and N2O) and indirect (non-CO2 emissions e.g. water vapour, contrails, NOx) which all have an effect on climate.

Accommodation

All accommodation carbon scores are based on kilograms of CO2e emitted per room per night.
- For properties that have not completed the ecollective survey, we apply a national average emission factor for this property until they complete the survey. This score represents 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 a particular hotel. This survey 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

- Staff events hosted by the business during the reporting period are included. In the calculations, we include 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, our calculations do not cover travel in most cases.
- If a venue is used multiple times we ask them to complete our venue carbon footprint survey. This gives us a more accurate reflection of their carbon footprint.
- For venues that have not completed the survey, we apply 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 are excluded from the scope.

Virtual events

- We have included the carbon emissions of virtual events (such as zoom meetings). For virtual events hosted by the business, we have included the total emissions. We have excluded virtual webinars attended by employees, as the carbon footprint will be negligible.
- For virtual events:

- ○ 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.
- ○ 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.
- ○ Video calls or webinars under 300 people are not calculated as the carbon footprint is minimal.

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 consider whether the web host uses renewable energy, take the amount of 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 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 any confusion, when we say 'page size' we mean "the data transferred 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 makes an assumption according to your client base. This helps us to calculate the carbon intensity of the electricity used.
- We use an average value to account for the energy intensity of the web data. This covers the energy used at the data centre, by the telecoms networks and by the end user's computer or mobile device.

Post

- Post, whilst it can seem minimal and is 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 post is normally calculated in weight, if this is unknown we used total spend as a gauge of annual quantity.
- The carbon footprint of post is calculated according to its material, printing, delivery and decomposition. For our calculations, we only include the carbon emissions associated with the delivery.

Staff commuting

- Staff commuting, whilst typically minimal and not included by most businesses, has been included in this study.
- To avoid adding hours of admin for an item that will have a tiny carbon footprint we ask 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 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.

Merchandise

- If the sale of merchandise only reflects a very small percentage of your revenue (typically under 1%) we still calculate an estimate for these emissions but advise against a full life cycle analysis.
- An estimate is based on the weight of an item and the primary material of the product.
- For companies who sell larger quantities of merchandise, we encourage more accurate measurements going into detail on the material used, transportation of materials, manufacturing of the product, waste materials, use of the product, delivery of product and end of life emissions.

Purchased Goods

- Goods and Services purchased in the reporting period and not already covered by another category already is included in the calculations.
- However not, all goods and services will be included, this will typically only include large spent items or expensive pieces of machinery. For example, the most typical areas that are included in this category are marketing activities and IT equipment.
- Calculations for physical items are based on the typical emissions of that product, if unknown then the calculations are based on the spend-based method.
- The spend-based method estimates emissions for goods and services by collecting data on the economic value of goods and services purchased and multiplying it by relevant secondary (e.g., industry average) emission factors (e.g. average emissions per monetary value of goods).

Customer trips

This is where the bulk of emissions lie. As all trips 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, the suppliers used and the number of inclusions.

Transport

- Transfers are calculated per vehicle unless the vehicle is used on a shared basis in which case the CO2e emissions will be calculated per seat.
- Emissions are calculated on distances travelled. For land-based journeys, these are based on the 'fastest route' available as provided on googlemaps.com unless stated otherwise.
- Emissions from car journeys are calculated using the distance travelled, fuel type and type of vehicle used.
- If vehicle type is unknown we assume cars are petrol powered medium-sized (Audi A4, Volkswagen Passat, etc with a 2.0l engine) unless otherwise specified. If we know there are a lot of passengers, we calculate the emissions based on a minibus or 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 include the total mileage of the vehicle and not the customer if this is known.
- For train travel, we calculate 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 flights, we assume all flights are taken in economy class unless otherwise stated. If the exact class of travel is known, calculations are updated accordingly.
- All flights are 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.
- Meals or other items provided by airlines during a flight are not included in the emissions.
- 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 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, NOx) climate change effects.)

Accommodation

All accommodation carbon scores are based on kilograms of CO2e emitted per room per night.
- We send an accommodation carbon footprint survey to accommodation providers where possible. 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 include the following:
  - Accommodation occupancy rate: properties with relatively low or high occupancy rates during the time of the audit are assigned a score that reflects an accurate per room carbon emission score. We know that a property with a 20% occupancy will

have a lower energy requirement than the same property with 100% occupancy and have factored this into the calculation.

- Fuel and energy usage at the property: this includes electricity, gas, oil, petrol, diesel, wood, kerosene, 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.
- Electricity: 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 apply average fuel and electricity rates for hotels within that country to calculate the total emissions per room.
  - We assume 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 ask for annual energy usage when possible in order to average this out.
  - When primary data is half completed we use a mixture of primary data and secondary data to calculate the total score. For example, if a supplier provides us with electricity data but no gas data, we calculate the emissions from their electricity and apply the industry average emissions from gas use based on their property type.
- Food, water, and outsourced tasks are classified as estimates (due to time constraints). The hope is that year on year, our calculations will get more accurate as we collect more information.
- For properties that do not complete the survey, we apply a national average emission factor of a hotel until they do.
- If the quality of the property is unknown, we assume it is similar to a 5 or 4-star hotel as these properties tend to have a higher average carbon footprint per room per night.
- When accommodation is on a cruise liner, the carbon footprint is calculated using a cruise specific survey focused on the 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.

Customer 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 include all associated emissions of 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 CO_2e using DEFRA conversion factors.
- Some activities such as visiting a museum have a small carbon footprint from the heating and electricity of the building itself. The framework takes these small footprints into account but awards them a global average footprint due to the lack of available information and projected size of the emissions per person per visit.
- Activities that are similar in their offering are 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 is given the same carbon footprint as 30 minutes of quad biking somewhere else.
- Any transport or meals included in the activity are calculated using the same method as other transport and meals.
- Any emissions relating to the activity provider's employees or HQ have are not 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 therefore categorise 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 apply the highest-scoring emissions (high-meat meal) factor for food.
- We assume every meal included in the itinerary is eaten by the customer and also include food for the guides unless stated otherwise.
- Occasional snacks and drinks are not included as the related emissions are minimal.

Trip leaders and local guides
- All guide emissions are taken into account including any international flights taken.
- We apply the same process to guides as we do to customers. If additional transfers are needed for a guide they are factored in.
- Additional local guides, who may only be involved in one activity as opposed to the majority of the itinerary, are not typically included in calculations.

Guide Houses

As all properties can be different, we have broken down the source of carbon emissions into different areas so we can calculate the emissions of each property.

All guide house carbon scores are based on kilograms of CO2e emitted per room per night.
- We have collected details from the team in order to complete our guide house carbon footprint analysis. 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:
  - 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, 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 based on similar properties in terms of size and location.

   ○ 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. If have figures during a particular season and an understanding of how it changes throught the seasons, this will be taken into account to give an estimate for the whole year.

   ○ 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.

- The total calculation is based on the number of rooms used and the number of nights stayed at the property. If it makes more sense for the aims of the business, a KPI of carbon footprint per meter squared may be used as an alternative.

Customer Travel

- Customer travel is not included in the services provided by the company. However, the emissions for this are estimated as the footprint of travel is significant and it is needed to use or participate in the product sold.
- The aim of the business should be to collect more accurate information on customer travel and see how it can influence this to have a lower footprint year on year.
- The estimate is calculated using information based on the country/state the customer is located in and the trips they attended.

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 is not included.
- At the time of writing, the 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 organisation'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 greenhouse 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 organisations 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 your business can influence and improve year on year. Your time is best spent implementing your carbon reduction strategies rather than perfecting these measurements.

Reporting Period

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

The latest audit took place in 2024, but has been designed with improvement in the quality and quantity of data in mind. 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 constantly updated by ecollective to improve the accuracy of the calculations.

ecollective's long term goal is not only to help companies reduce their carbon footprint, 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 provides a guide to our calculations, 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.

Realistically, 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 food provided on trips.
- Increase the percentage of primary data available for accommodation calculations.

Feedback

A review process is in place to improve 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@ecollectivecarbon.com