Carbonfootprint.org Methodology for the online carbon calculators

The online calculators on this web site follow the methodology outlined by the UK Government, and currently using the "Greenhouse gas reporting: conversion factors 2019".

The only exceptions to this are :

1. Country specific electricity factors

- Many publicly available country specific electricity emissions factors are provided for free within the calculator tool. A full list of these along with the sources is provided by Carbon Footprint Ltd in International Electricity Factors.
- Where information is available, the emissions factors provided in the online calculators cover emissions from both Generation of the Electricity and Transmission & Distribution (T&D) losses. The calculations do not, however, include the Well to Tank (WTT) Emissions associated with extraction, refining, distribution, storage of the fuels used in the power stations.

2. The Individual / Household's Secondary Footprint calculations

- These factors are produced from Defra 2012 Supply Chain factors (see below for more details).

The calculator uses emissions factors which take account of all greenhouse gases (i.e. CO_2, N_2O, methane etc.) released by the activities, with the results presented in units of metric tonnes of CO_2 equivalent (CO_2e). In most cases that means the results will be slightly higher than if calculating CO_2 only. The calculations of emissions from fuels are Scope 1, meaning the direct GHG emissions from the combustion of the fuels. The calculations do not include the Well to Tank (WTT) Scope 3 Emissions associated with extraction, refining, distribution, storage and retail of the fuels.

When calculating emissions for Wood the emissions factors for Wood Pellets is used. The calculator also assumes domestic coal is used in both the Business and Household calculators.

The "free to use" Business Carbon Footprint Calculator doesn't include all Scope 3 emissions from your supply chain such as purchased products & services, waste, water and outsourced logistics. If you need to include these elements please contact us as we have bespoke calculator tools that can be used for these purposes.

To complete your carbon footprint calculation, enter data from your business (or lifestyle) over the last 12 months (or time period of your choice). i.e. if you are calculating your car travel emissions then enter the total distance you have travelled over the past 12 months. The following sections below give further information on how to use the calculator and answers to frequently asked questions.

Welcome Tab

Why do we need to select the country where I live?

This enables a more accurate calculation of your emissions from electricity usage, as the factor depends on how the electricity is generated in the region (e.g. from Coal, Gas, Nuclear, Renewables etc.). The country selection also allows you to compare your results with the average for your

country. Country averages in the Results Tab were sourced from the World Bank with the 2017 update of the Emissions per Capita.

What consumption period should I use?

Carbon footprint calculations are typically based on annual emissions from the previous 12 months, however you are able to select a more suitable time period (e.g. a month) if you so desire.

House Tab / Buildings Tab

What number do I put into number per household to calculate an individual's carbon footprint?

Select the actual number of people occupying the household in order to calculate your own personal proportion of the total household carbon footprint. Your individual footprint is calculated by dividing the total amount of energy by the number of people in your house. If you want to calculate the full household's footprint, then select 1 in the section.

How do I enter energy data from my fuel bills?

When entering data for fuel and electricity the most accurate way is by entering the amount used in kWh or volume (where appropriate). There is an option to enter gas based on the amount spent. This is a less accurate way of calculating the emissions, due to the various energy tariffs available. The calculation results assume the following energy tariffs: Gas at 3.398p/kWh. Note: The Business Calculator assumes you are calculating emissions for a micro or small sized organisation. For coal fuel, the calculator therefore assumes domestic coal rather than industrial coal. If your business uses industrial coal then the emissions from the same mass of fuel will be slightly lower than those results produced by this calculator. Please contact us if you use industrial coal in your business.

Flight Tab

How are the flight emissions calculated?

Firstly, the distances are calculated between the airports selected, using the greater circle method. This is then multiplied by the appropriate emissions factor specific to the type of flight (UK domestic, short haul or long haul) and the class of seat taken (e.g. economy class, business class etc.). The emissions factors include the distance uplift to compensate for planes not flying using the most direct route i.e. flying around international airspace, stacking etc.

What is the difference between selecting First Class and Economy seating?

Different emission factors were calculated according to the relative area on the aircraft occupied by different seating classes, for example a first class seat would occupy a larger area compared to an economy class equivalent per passenger and therefore attribute to a larger percentage of the overall planes emission.

How do you account for a plane being only partly full?

The emission factors assume an average occupancy of the plane, and for the emissions to be divided between the occupants in various seat classes.

What is the Radiative Forcing Factor?

Emissions from planes at high altitudes impact climate change more than if the emissions were released at ground level. To take account of this you have the option to factor up the CO_2 emissions released by aviation Radiative Forcing Factor of 1.9. From 2013, the UK Government has included emissions factors to cover radiative forcing which have been used in the online calculators. It is now recommended to include Radiative Forcing in the calculations.

Car/Motorbike Tabs

What is the most accurate calculation method?

The carbon footprint from car usage can be calculated using different methods, providing the result in differing levels of accuracy. The combinations are listed in priority order with those at the top providing the most accurate results:

1. Type of fuel and the amount of fuel used per annum.
2. Type of Fuel, Annual Mileage and MPG.
3. Annual Mileage and the CO_2 g/km figure.
4. Year, Make, Model, Fuel Type and Annual Mileage.

If you enter details of year, make, model of vehicle then the official test cycle CO_2 g/km emissions factors for that specific vehicle are used in the footprint calculation. Where the official test cycle vehicle CO_2 g/km figure is used then the calculator adds 22.9% to the results to account for "real world" driving.

Do I enter the distance I drive in a week, or the total mileage / km shown on my car?

If you are calculating your carbon footprint for a 1 year period then enter the distance driven in the last 12 months. If you have selected a different period on the “Welcome tab” then enter the distance driven in time period selected.

Bus/Rail Tab

Where are the factors for bus and rail taken from?

The factors used for buses and rail were calculated based on publicly available data from the major service operations, national statistics and the department for transport.

I only have stations and not distances?

The scope of the calculator only allows distances to be entered therefore please estimate the journeys distance between stations. One way to do this would be to use a web site such a Google maps to calculate the road mileage between the 2 stations. Road distances are usually a good approximation to Rail distances.

Secondary Footprint Tab (on the household calculator)

What is a secondary footprint?

This is a measure of the emissions caused through the manufacture, delivery and disposal of products and services we buy. Most carbon footprint calculators ignore this part of your footprint, but without it you may risk under estimating your total footprint quite considerably.

What factors are used to calculate my secondary footprint?

The secondary footprint calculator is a high level tool for estimating the carbon emissions associated with other things we typically spend money on. If you have specific information about the supply chain emissions of any particular product then that source should be used instead.

To use the tool you should identify the amount of money spent on each type of product or service category (including VAT). The result is an estimate of the total upstream emissions associated with the supply of the product or service. The factors used are taken from "2012 Guidelines to DEFRA / DECC's GHG Conversion Factors for Company Reporting". The source of the data used was the Centre for Sustainability Accounting (CenSA), Leeds, UK. As these factors are based on cost they have been corrected to account for inflation between 2012 and 2019.

Emissions calculations for food take account spend and the likely difference between different diet types e.g. vegan or heavy meat eater by using corrections to the factors provided by Dietary greenhouse gas emissions of meat-eaters, fish-eaters, vegetarians and vegans in the UK, where the following definitions are used :

- High Meat Eater > 100g of meat per day (on average)
- Medium Meat Eater = 50 to 100g of meat per day (on average)
- Low Meat Eater < 50g of meat per day (on average)