

How to calculate your carbon emissions

What is a carbon footprint?

A carbon footprint is the total output of greenhouse gas emissions caused by an organisation, event, product or person.



Greenhouse gases trap heat in the atmosphere and contribute to climate change. 'Carbon' is used as shorthand for all greenhouse gases as it is the most dominant, although there may be other gases in addition to carbon dioxide that contribute to your organisation's carbon footprint.

Measuring carbon emissions annually offers a relevant, complete, consistent, accurate and transparent look at the amount of carbon the different facets of business create.

This is important as understanding your organisation's carbon footprint will further your commitment to sustainability policies, programmes and values and is an essential part of any involvement in emissions trading schemes.

How do you start?

The most important step is to establish a baseline –the standard against which you will measure your year-on-year performance. You need to make sure there isn't anything out of the ordinary that has taken place during the 12 month period you're using (e.g. you've acquired new business, lost big contracts, started a new product line, etc.) as this will skew your results for your yearly targets and reviews.

This guide will talk you through how to do a carbon footprint using the Annual Carbon Emission (ACE) carbon calculator, however there are many other guides and international standards that you can follow, which we have listed at the end of this document.

How do you measure your carbon footprint using the ACE tool?

ACE is designed to help measure your organisation's carbon emissions. It includes various different measurement options for each activity, to fit in with how you currently collect your data.

It is a simple Excel workbook with:

- Monthly sheets for you to input your usage each month
- Automatically populated graphs of cumulative annual emissions

Simply input data on waste, energy use, refrigerant loss (if applicable) and travel (including by plane and taxi) into the appropriate month's sheet to keep track of your carbon emissions.



The provided charts have pre-set destinations for air and road transport that help estimate distance travelled. Standard emissions factors are used to convert energy to emissions, meaning most emissions factors incorporate non-CO₂ gases. These units are given in CO₂ equivalent (CO₂e). For additional help on completing the ACE tool contact the [Sustainable Business Network](#) or [Catalyst R&D](#).

[There are five steps to calculating your carbon footprint using the ACE tool:](#)

Step 1: Understanding your motivation

It is important to understand what your motivations are for completing your organisation's carbon footprint as that may determine how and what you measure. If you are required to follow a country's legislative framework for mandatory carbon accounting we suggest you consult their frameworks and an independent consultant as this guide is not exhaustive in nature.

Step 2: Defining your emissions

There are three scopes for considering and measuring carbon emissions that look at different facets of your business:

- Scope 1 measures the direct impact of your organisation, or emissions that are created by assets that your organisation owns. This includes things like company vehicles and fuel combustion on-site.
- Scope 2 measures carbon you don't create but consume, which includes electricity usage and natural resources.
- Scope 3 measures the impact of your employees and contractors and the carbon they create: air travel (or business travel that you haven't included in scope 1), waste, contractor-owned vehicles, outsourced activities, or commuting. To fit into some government-mandated reporting frameworks, scope 3 emissions aren't mandatory, but depending on your organisation's biggest impacts and carbon emissions, you may want to include them.

Step 3: Reducing your emissions

Once you've established a baseline of what your organisation's typical emissions are per year and you know what your current emissions profile is, you need to work out a strategy to reduce these emissions. This will bring broad benefits to your company, and for companies that haven't done this before, the most immediate benefit is probably cost, since measurement enables you to identify areas of inefficiencies where you can improve. Not many organisations manage to get to zero carbon emissions, but there are many things you can do to reduce emissions.

Managing carbon is as much about saving money, cutting risks and creating new business opportunities as it is about helping the environment. The best thing to do is establish

where you have the biggest impacts and the opportunities to reduce your emissions in those areas. If employee transport is a large contributing factor, carpooling, ride sharing and public transport are other options.

Set an annual reduction target: this will give you a goal to work towards and help you stay on track. It will also inform a greater emissions plan (which includes purchasing reputable carbon credits to counter what you can't offset) for reducing emissions in the other scopes. There are many ways to do this, so please [get in touch](#) with SBN if you have any questions about how to do this.

Step 4: Verification

Because there are so many different things you could potentially measure as part of your carbon footprint, getting your carbon footprint verified will assess whether or not you're measuring the right things, if the information has been captured accurately, and help to identify how you can reduce emissions.

Some verification processes come with certifications, like [CEMARS](#) and [carboNZero](#), ISO14:064-1, international certifications and the Greenhouse Gas Protocol. For information on who can provide assurance and verification for your carbon footprint in NZ, go [here](#).

Step 5: Reporting on your emissions

It is good to let your key stakeholders (your customers, employees, suppliers, board members, etc.) know about your emissions targets and how you are tracking. You might want to do this as part of a more complete sustainability report, internal report, on your website or in annual reports. The important thing is providing transparency and openness to stakeholders so they can see the journey you're on and help you achieve your goals.

Additional resources and international frameworks

There are different standards and requirements depending on which country you are reporting in. We recommend going to your national government's website and following their guidelines. The following links are for New Zealand and international best practice and standards.

Ministry for the Environment [Voluntary Corporate Greenhouse Gas Reporting](#), 2015

[The Greenhouse Gas Protocol](#), 2015 Revised Edition

The OECD [Corporate Greenhouse Gas Emission Reporting](#)