

A Quick Guide to Carbon Footprinting

Gareth Kane

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Introduction

Before a business can attempt to reduce its carbon emissions, it is important to measure current emissions – the famous ‘carbon footprint’. The main reasons for measuring a footprint are:

- to provide a baseline against which future emissions can be compared;
- to identify ‘hotspots’ for action;
- to identify obvious ‘quick wins’ during the analysis;
- to make a statement of intent to internal and external stakeholders that the company is serious about the climate change agenda.

Definition

A carbon footprint is the total amount of persistent Greenhouse Gas (GHG) associated with a person, an organisation, a country or a product.

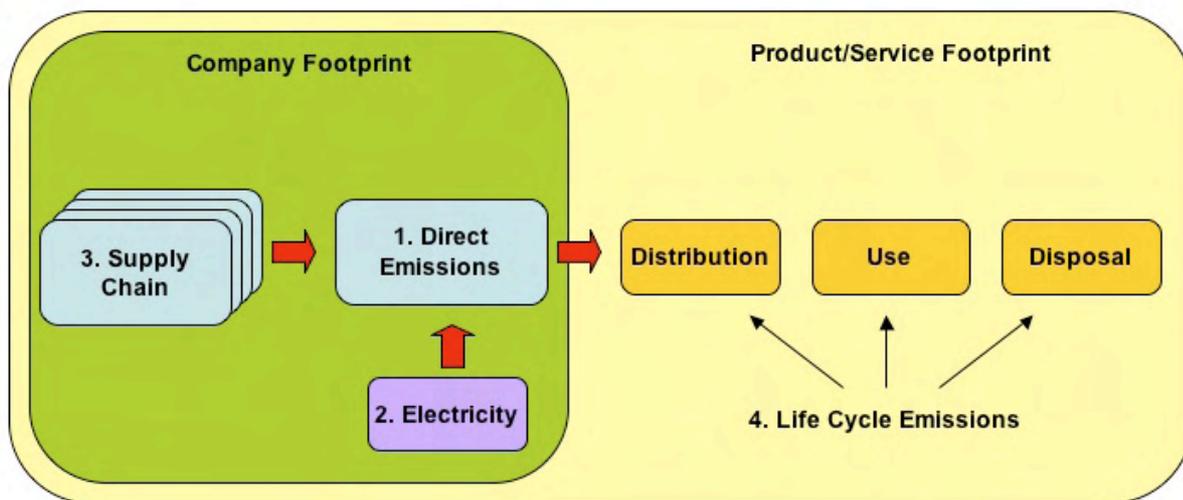
Greenhouse Gases

The recognised 6 greenhouse gases are:

- Carbon Dioxide (CO₂);
- Methane (CH₄);
- Nitrous Oxide (N₂O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs);
- Sulphur Hexafluoride (SF₆).

These all have different global warming effects, so they tend to be expressed as kilogrammes or tonnes CO₂ equivalent using standard conversion factors. For example, 1kg methane is equivalent to 23kg CO₂. From now on I'll refer to all of these generically as “carbon emissions”.

Scope of Carbon Footprints



There are three types of carbon emissions for organisations, and four for a product:

1. direct emissions from internal operations (eg carbon dioxide and nitrous oxide from vehicle use, carbon dioxide from gas fired heating systems);
2. indirect emissions from electricity use (ie the carbon emissions from the power station);
3. direct and indirect emissions from suppliers (and their suppliers) relating to the goods and services purchased;

and for products:

4. emissions from the distribution, use and disposal of the product after it has been manufactured.

This is where footprinting gets complicated and controversial. Type 3 emissions are usually very significant (eg in the UK's National Health Service they make up 60% of the footprint), yet many companies, including major supermarkets, simply ignore them, as does the UK Government and many personal carbon calculators on the Internet. For example, the UK's national *emissions* (types 1 & 2) are officially going down, but this is because we are offshoring our dirty industries (type 3) and our carbon *footprint* is actually going up. In my opinion, if you use the word 'footprint', you *must* include Type 3 emissions. This is easier said than done and will require a significant amount of data gathering – and much of that data will be held by other organisations, who may not be keen to reveal it.

Type 4 emissions are hard to calculate because predicting the lifecycle of a product is very difficult, but again it is important to include these emissions as they can often exceed the 'cradle to gate' emissions of types 1-3. For example, a compost company recently put a carbon label on their peat-based product with emission types 1-3, ignoring the fact that the type 4 emissions as the peat breaks down in use are 5 times as high as the rest put together.

Making Assumptions

The inclusion of indirect emissions from the entire supply chain raises one very difficult question – “Where do you stop?”. If you start to list the number of potential sources of greenhouse gases amongst your suppliers, their suppliers etc, you will soon realise that this is a very data intensive exercise. I recommend the following shortcuts to prevent the exercise becoming unmanageable:

- 80/20 Thinking: if the company consumes a large amount of energy-intensive material (eg Aluminium) and a tiny amount of low energy services (eg contractors who carry out an annual site audit), then it is reasonable to count the production of aluminium in and exclude the contractors.
- Use of published data: If suppliers already publish their carbon footprint then it is reasonable to use a pro rata amount of this. Data from a study on a similar organisation is acceptable as long as it is documented.

The golden rules of including such assumptions are:

- Relevance: obviously the assumption must reflect the business or product – you can't ignore significant impacts in one part of your scope just because they lie outside the scope of footprints in other sectors;
- Consistency: the same assumption should be applied to all relevant elements of the footprint, not just where it suits best;
- Transparency: the source or logic behind each assumption should be documented and published.
- Conservativeness: when in doubt you should assume the footprint is larger rather than smaller.

Expressing the Results of the Footprint

For products the carbon footprint is usually expressed in terms of a functional unit. A functional unit represents the amount of utility the product provides and allows different products to be compared. For example grams CO₂ per passenger kilometre is the standard measurement for passenger vehicles. This allows, say, a car to be compared with a train. The choice has to be sensible – I've seen a TV manufacturer use refresh rate as a functional unit, but a 100MHz TV does not give the same utility as two 50MHz TVs – there is still only one picture, only sharper.

For organisations, footprints are usually expressed per annum, but this can be affected by major changes to the organisation such as an acquisition or a round of redundancies. Therefore it is usually worthwhile expressing the footprint both as a gross annual figure and as a function of the output of the business (eg CO₂ equivalent per product).

Conclusion

While Carbon Footprinting is in vogue at the minute, calculating a proper carbon footprint is a considerable task. In summary, I recommend you:

- Choose the scope to fit the exercise (1-3 for organisations, 1-4 for products);
- Use the 80/20 rule and published data to make the exercise easier;
- Document all assumptions and make sure they are robust;
- Express the results carefully to avoid misleading figures.

About Gareth Kane

In Gareth's eleven years' experience in the environmental and sustainability sector he has worked with hundreds of organisations from micro-companies through to trans-national corporations, across many sectors including construction, pharmaceuticals, engineering and hospitality.

Gareth is an approved expert advisor for Envirowise, a co-ordinating reviewer of research for the UK Government's Sustainable Consumption and Production programme, an expert reviewer of EU Interreg energy project proposals and has been appointed to the pool of experts for the EU's URBACT programme. He recently authored "The Green Business Bible" ebook.

Gareth has a Bachelor's degree in Engineering from Cambridge University and a Master's Degree in the Eco-Design of Large Made to Order Products (eg ships, oil platforms) at Newcastle University. He is a member of the Institute of Engineering and Technology and a Chartered Engineer.



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Dale Robinson, MD,
Stone Homes Ltd

"I thoroughly recommend Gareth Kane and Terra Infirma to anyone who needs to put sustainability principles at the heart of their project or organisation."

Nick Devitt
Dott07

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Terra Infirma's slogan, "bringing sustainability to life", sums up our company ethos: turning the theory of sustainability into practical reality. The company delivers a wide range of services in the sustainability field:

- Consultancy: feasibility studies, scoping reports, carbon footprinting, business planning etc;
- Embedding Sustainability: working with our clients' staff to develop and implement sustainability programmes such our 'Lean, Mean & Green' service;
- Training: a wide range of off the shelf and bespoke training courses are available;
- Facilitation of events and workshops.

Recent clients include: AEA Technology Ltd, DEFRA, Dott 07, Durham County Council, Gentoo Housing Group, the Low Carbon Innovation Network, NISP North East, RWE nPower and Stone Homes Ltd.

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