

Co-Treatment Carbon Footprint guide

As a guide for our customers and others that are interested in the topic of sustainability and in particular carbon footprint, we have put together a guide to the terms used and their meaning. The topic is continuously evolving, and we will make every effort to keep this guide updated.

We'd like to acknowledge the contribution from the Future Learn programme – linked below

[Future Learn - How To Measure Reduce and Offset Your Company's Carbon Footprint](#)

What are greenhouse gases?

There are a number of different greenhouse gases (GHGs) that are being emitted into the atmosphere and causing climate change through the greenhouse effect.

The main GHGs are outlined below:-

1. **Carbon dioxide (CO₂)** – this is the most well-known of the GHGs (often abbreviate to talk about a “carbon reduction strategy” when on reality we are really talking about a strategy to reduce all GHG emissions) as it makes up around 80% of all GHG emissions. This is due to it being generated when we burn fossil fuels to generate power or manufacture cement (and other common, large-scale activities)
2. **Methane (CH₄)** – generated by livestock as well as other farming activities and landfill decay. Methane makes up around 10% of the GHGs
3. **Nitrous oxide (N₂O)** – generated through various agricultural activities, fossil fuel combustion and water treatment processes. Nitrous Oxide makes up around 7% of the GHGs
4. **Fluorinated gases** – this is a range of gases such as Hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride, and nitrogen trifluoride! These make up around 3% of emissions but are the most potent from a global warming perspective.

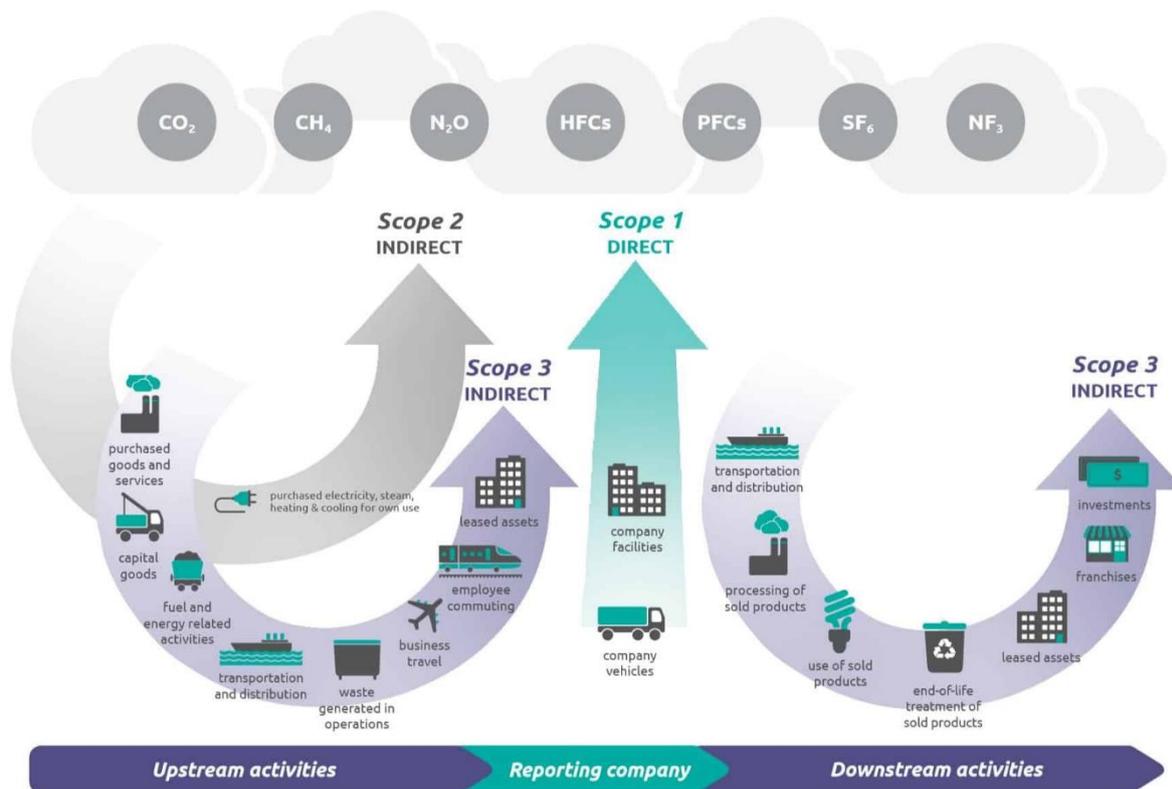
It can help a lot in how to approach carbon footprint if the terms above and associated gases are converted to a common unit

Although CO₂ is the most common GHG it is not the most powerful from a global warming perspective. *In fact, it is estimated that 1 tonne of Hydrofluorocarbons is the equivalent to over 1,800 tonnes of CO₂. One tonne of methane is not as bad as that, but it is still estimated to be the equivalent of around 25 tonnes of CO₂ in terms of its impact as a greenhouse gas.*

So, to make it much easier to measure and compare carbon footprints, all emissions are converted into “Carbon Dioxide Equivalent” which is written as “CO₂e”. So, when you hear people referring to “our carbon footprint is X tonnes” or “our carbon footprint is Y tonnes of CO₂” what they are referring to is **CO₂e**.

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After that explanation we then breakdown the CO₂e emissions by a company into **3 areas called Scope 1, 2 and 3 emissions**. This will be explained later but each of those areas are shown in a commonly used diagram below which is used to show the differences for the 3 areas:



Source | <https://www.earth.sage.com/blog/scope1-scope2-scope3-emissions>

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Understanding scope 1 emissions

Scope 1

All direct emissions from the activities of an organisation or under their control. Including fuel combustion on site such as gas boilers, fleet vehicles and air-conditioning leaks.

The key point here is that these are “**direct emissions**”, i.e., they are caused by your organisation actually generating GHGs directly through their company activities.

For large manufacturing companies (or the energy companies themselves) these can be huge. For smaller SMEs and service businesses these are often very small. The most common ones (which you can see from that definition above) being:

1. **Gas supply** (usually for heating but possibly for a company kitchen too) – because you pipe the gas into the building and combust it in the boiler onsite (with CO₂ being released from your offices) this is classed as a scope 1 emission.
2. If you have any **company vehicles**, these create scope 1 emissions because the fuel is burnt in those vehicles and the emissions come directly from the exhaust of those vehicles. For logistic / transport businesses these can be very large. Again, for smaller businesses and those operating in the service sector these can be small or non-existent now that running a company fleet of cars (that are not electric) is not as tax efficient as it used to be.
3. **Air-conditioning leaks** – Each year most companies will have their air-conditioning systems serviced. This creates an “F-Gas certificate” which would show any coolant leaks and the emissions caused by the fact that the system needed topping up. *Please note: this is usually a very low figure and is only really needed if you are applying for a formal certification of your emissions (e.g. PAS2060).*

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Understanding scope 2 emissions

Scope 2

These are indirect emissions from purchased or acquired electricity, steam, heat and cooling.

Unlike scope 1, scope 2 are *indirect emissions* because your company is not directly creating the greenhouse gasses by burning fossil fuels in this case. Instead, it is an indirect emission caused by the purchasing of electricity (it includes steam, heat).

So, scope 2 emissions are the easiest ones to understand and to measure. It's just the emissions caused by the electricity that is purchased from our national grid.

With scope 2 emissions there are two common ways of measuring and reporting on them.

1. Location-based

This is what we'll be working out in Week 2. It's the emissions generated by the electricity you use (kWh) in the country where your business operates. In reality the **only way to reduce your location-based emissions is to use less electricity**, unless of course your country improves their 'grid emission factor' through more investment in renewable energy supply!

2. Market-based emissions

This is where you measure your emissions based on where or how you purchase your electricity. So, if you choose to purchase your electricity from a 100% renewable energy supplier then a company can effectively report your scope 2 emissions as zero on this basis.

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Understanding scope 3 emissions

Scope 3

These are indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream.

It's basically everything else that a company does that can have an impact on the environment (that's not covered in scope 1 and 2).

The categories are typically simplified into the following:

- Purchased goods and services
- Business travel
- Employee commuting
- Waste disposal
- Use of sold products
- Transportation and distribution (up- and downstream)
- Investments
- Leased assets and franchises

For many businesses, (that don't produce and sell a physical product) it is high probable that 99% of their scope 3 emissions are from the top 3 in that list; the goods and services that you use to get business done, and the commuting and in-work travel from your staff. *Those are in fact fairly easy to measure.*

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Understanding the key terms: Carbon Neutral / Carbon Negative vs Net Zero vs Science Based Targets

There is a lot of talk at the moment about “the race to Net Zero”. That’s good to see but do most people actually know what Net Zero means?

Most of us have now heard that the world needs to get to Net Zero by 2050, and many (but not all!) countries have pledged to achieve that. To reach this target companies also need to be Net Zero in the same timeframe. However, lots of companies are already claiming to be *Carbon Neutral* or even *Carbon Negative*.

The difference between Net Zero and Carbon Neutral is not well understood. And when you factor in the lack of knowledge around Scope 1, 2 and 3 emissions then it gets even more confusing when people end up using the same terms to mean very different things!

OK, let *Co-Treatment* try to clear things up, at least a little bit.

There are lots of definitions floating around so we have tried to pull them all together in a way that is straight forward to understand.

Carbon Neutral

This is achieved when an organisation has measured its carbon footprint (CO₂e) and then carries out carbon offsetting activities to try to remove the same amount of CO₂e from the atmosphere.

So, to challenge here a little bit, as an example, some offsetting schemes involve paying money to protect a forest. That’s a good idea as a project, however that forest was there anyway. So just **because someone isn’t cutting it down doesn’t mean that it’s right for a company to continue to emit carbon**. There are also some reports of the deforestation that’s being ‘saved’ simply just moving to other locations.

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Net Zero

Here's where a lot of confusion starts. Initially this sounds like it might be the same thing as being carbon neutral. However, it's best to think of these as two fundamentally different concepts because they are worlds apart!

It wasn't until October 28th, 2021, when the first formal definition of Net Zero from the SBTi (the Science Based Targets Initiative). Please feel free to use this if [you want to read more about it on their website](#) but here are the headlines.

1. It typically requires a 90% to 95% (depending on your business sector) reduction in your emissions in absolute terms from your base year. But what that basically means is that you have to reduce by that amount *regardless of any growth of your business in that time*.
2. The reductions must be across scope 1, 2 and 3.
3. **The final 5% to 10% will probably have to be removed using more expensive "Direct Air Capture" type approaches** (not the traditional, and much cheaper offsetting projects that you can use for carbon neutrality).

So just to confirm the difference between carbon neutrality and Net Zero:

1. Being carbon neutral just means that you have measured your footprint and you are doing some verified offsetting to try and mitigate that.
2. You could be carbon neutral already. But carbon neutrality does not solve climate change. Paying money to protect a forest from being chopped down is a worthy cause, however it shouldn't mean you can keep pumping tonnes of CO₂e into the atmosphere.
3. **Net Zero requires a massive carbon reduction.** For most companies this is well outside the bounds of what could even be achieved in the next 10 years (at least with current technology). But it's the goal that we have to hit by 2050.
4. The "Net" bit in Net Zero will have to be dealt with via carbon capture techniques to draw the CO₂e out of the air, and not with the cheaper offsetting projects that are allowed for carbon neutral certification.

Carbon Negative

This one is straight forwards once you have understood carbon neutrality. It's just when a company chooses to offset more carbon than they produce.

Climate Positive – this is another term that means the same as carbon negative.

Carbon Positive – this term is out there so we have included it. In our opinion it actually means the same as carbon negative. It is typically used as a marketing / PR term that still refers to a company that is making a net positive impact on the environment by offsetting more CO₂e than they generate.