CARBON CALCULATION: START WITH THE BASICS

RAA SERIES OF ARTICLES

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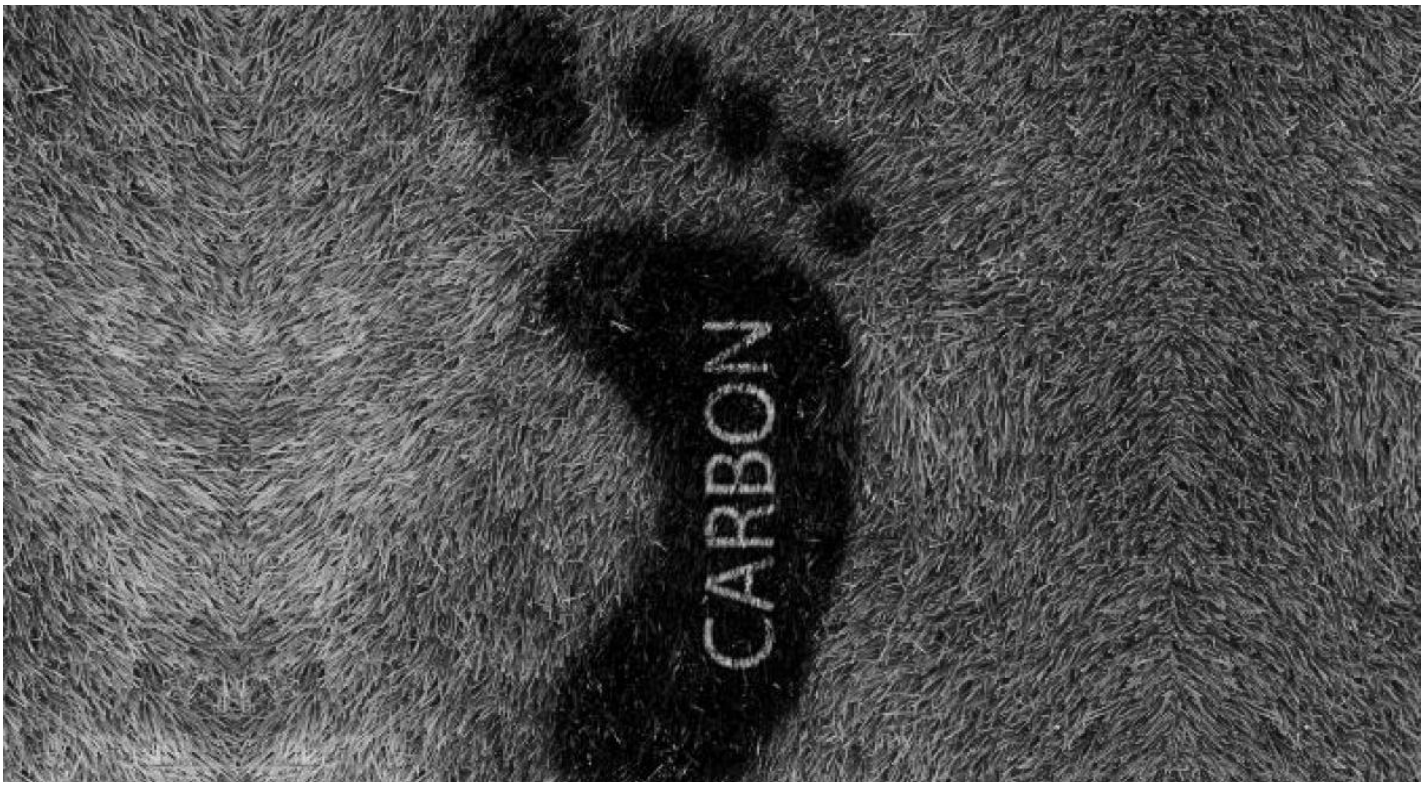

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❖ DID YOU KNOW?

- ❖ Global energy-related CO2 emissions reached a record 37.8 billion tonnes in 2024 signaling that the wider economy is still heavily exposed to fossil-energy use
- ❖ CO2 concentrations are around 50% above pre-industrial levels.
- ❖ As carbon pressures continue, investors are placing greater importance on whether a business understands its energy use, resilience, and transition readiness.
- ❖ CO2 emissions are calculated, not guessed.
- ❖ Electricity is often the easiest place to start.

WHY CARBON CALCULATION IS BECOMING MORE RELEVANT

Carbon is no longer just a reporting topic. It is becoming part of how businesses respond to customer expectations, supply-chain requests, financing discussions, and operational efficiency pressures.

A larger customer may ask a supplier for emissions information. A bank or investor may want to know whether the business has visibility over energy and climate-related exposure. Management may want to understand where fuel and electricity costs are rising and whether inefficiencies can be reduced. In some sectors, carbon data is also becoming more relevant to tenders, procurement, and stakeholder credibility.
So the issue is not simply about whether a company wants to report carbon.

It is increasingly about whether the company understands its own operational footprint well enough to respond when the questions come.

Start with a simple formula

At its most basic level, carbon calculation is not mysterious.

It usually starts with a simple logic:

Activity Data × Emission Factor = Emissions

That is the foundation.

If a business uses electricity, consumes diesel, operates company vehicles, or sends waste to landfill, those activities can be quantified.

Once the activity is known, an appropriate emission factor can be applied to estimate the amount of greenhouse gases generated, usually expressed as **carbon dioxide equivalent**, or **CO2e**.

This is one of the most important things for businesses to understand. Carbon is not usually guessed. It is calculated from activity.

That is why good carbon measurement begins with good operational data.

What kind of activity data matters?

For many businesses, the first useful data points are quite ordinary.

In fact, they are often already sitting somewhere in the business.

Examples include:

- **electricity bills**
- **diesel or petrol purchases**
- **fuel used by generators**
- **company vehicle mileage**
- **waste disposal records**
- **business travel records**

This is why carbon calculation should not be seen as something detached from business operations.

In most cases, it begins with data the business already handles in some form, even if that data is not yet organised for carbon tracking.

CO2e – Carbon Dioxide Equivalent

Not all greenhouse gases are the same. Carbon dioxide is the best known, but it is not the only greenhouse gas.

Businesses also need to be aware that emissions may involve gases such as methane, nitrous oxide, and certain fluorinated gases. Because these gases have different warming effects, they are often converted into a common unit called **carbon dioxide equivalent**, or **CO2e**.

This makes the results easier to compare and report in a single figure. So when a business sees a carbon number expressed in **tCO2e**, that usually means the emissions have been converted into a standardised carbon-equivalent form.

Understanding CO2e

(Carbon Dioxide Equivalent)

It is a universal unit of measurement to express the total global warming potential (GWP) of all greenhouse gases

- **Greenhouse gases (GHGs) are natural gases that trap heat in the Earth's atmosphere, regulating the planet's temperature and can cause global warming if unabated.**

The GWP depends on the gas's ability to absorb energy and how long it stays in the atmosphere.

- **Carbon Dioxide (Baseline gas (GWP = 1).**
- **Methane(CH4) (GWP is roughly 28–30 times that of CO2 over 100 years.**
- **Nitrous Oxide (N2O)(GWP is approximately 265–300 times that of CO**
- **Fluorinated Gases (F-gases) -(1000-24000 times)**

GHG Protocol

The GHG Protocol Corporate Standard requires reporting of the main greenhouse gases covered under international climate reporting conventions. Companies must report on the following, generally measured in tonnes of CO2e

- **Carbon dioxide**
- **Methane**
- **Nitrous oxide**
- **Hydrofluorocarbons (HFCs)**
- **Perfluorocarbons (PFCs)**
- **Sulphur hexafluoride**
- **Nitrogen trifluoride**
-

GHG Protocol standards are the most widely used accounting tools to measure, manage and report greenhouse gas emissions.

IPCC
Intergovernmental Panel on Climate Change

is the United Nations body for assessing the science related to climate change. IPCC remains an important global scientific reference point

WHERE THE GHG PROTOCOL BECOMES PRACTICAL

For most businesses, one of the most useful frameworks is the **GHG Protocol.**

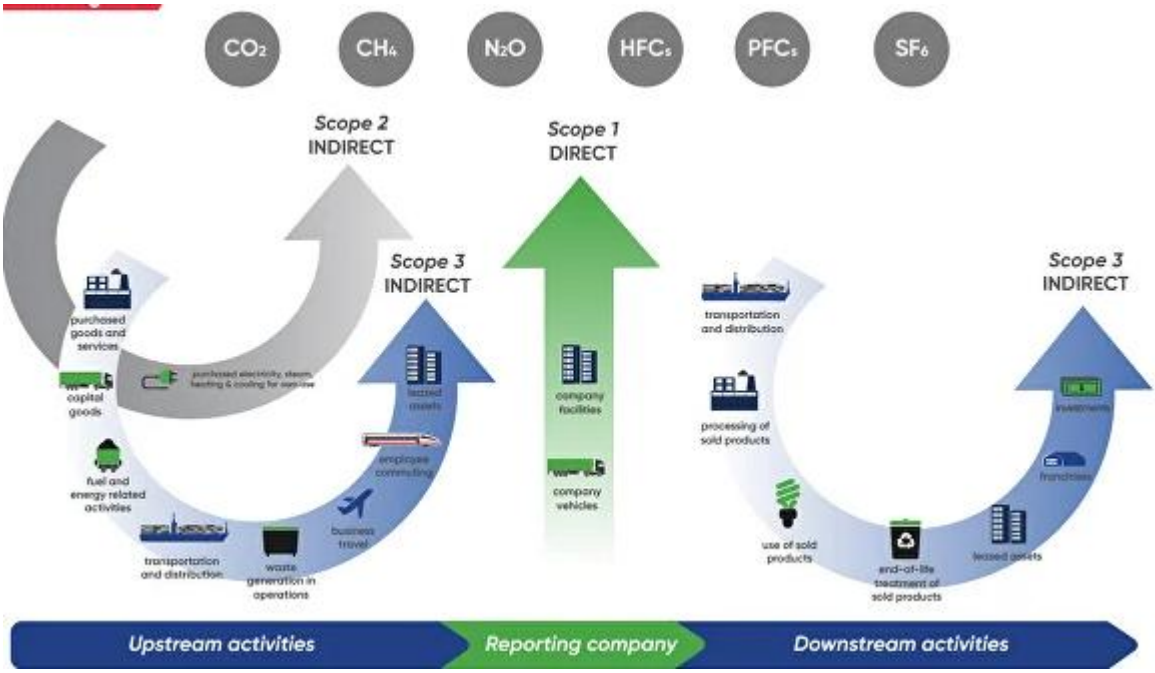
This is because it gives companies a practical structure for thinking about emissions in three categories:

- **Scope 1** – direct emissions from sources the company owns or controls
- **Scope 2** – indirect emissions from purchased electricity or energy
- **Scope 3** – other indirect emissions across the value chain

This matters because it gives businesses a way to organise their thinking.
Instead of asking, "Where do we even begin?

- What fuel do we burn directly?
- How much electricity do we purchase?
- What other indirect activities may be relevant later?

That makes the whole exercise more manageable.



GHG PROTOCOL
Source : https://ghgprotocol.org/blog/you-too-can-master-value-chain-emissions

SCOPE 1: START WITH WHAT THE BUSINESS DIRECTLY CONTROLS

Scope 1 is often one of the simplest starting points because it relates to direct emissions.
This may include:

- **diesel used** in generators
- **fuel used** in company-owned vehicles
- gas used in boilers or industrial equipment

- refrigerant leakage from cooling systems

For many SMEs, even identifying these items clearly for the first time is already useful. It improves visibility over direct energy use and operational dependence.

SCOPE 2: START WITH PURCHASED ELECTRICITY

For many offices, factories, facilities, and service businesses, **purchased electricity** is one of the most obvious starting points.

That sits under Scope 2.

Electricity is often easier to calculate than many other categories because the activity data is usually available from monthly bills or usage records. Once electricity consumption is known, it can be multiplied by the relevant emission factor for the location or grid.

This is why Scope 2 is often where businesses begin to see the connection between carbon and cost. If electricity consumption is high, the issue is not just emissions. It may also point to efficiency opportunities, cost-management issues, and possible equipment or process improvements.

SCOPE 3: IMPORTANT, BUT DO NOT LET IT OVERWHELM THE STARTING POINT

Scope 3 covers other indirect emissions across the value chain. This can include purchased goods and services, upstream transport, waste, business travel, employee commuting, and much more.

For many businesses, Scope 3 is where the subject starts to feel complicated.

And that is exactly why businesses should be careful not to let Scope 3 stop them from starting.

The better approach is usually proportionate. Begin with what is visible and manageable. Build internal understanding. Then expand over time.

For some SMEs, selected Scope 3 categories such as business travel, employee commuting, or waste may be a sensible early step. For others, Scope 3 may become more relevant when customers or larger supply-chain partners begin asking for it more directly.

The point is not to do everything at once. The point is to start with clarity.

Carbon calculation is also a management tool

One of the mistakes businesses sometimes make is to treat carbon calculation only as a disclosure exercise.

In reality, it can be a useful management tool.

It can help a business:

- see where energy is being used
- identify cost hotspots
- improve internal data quality
- strengthen operational visibility
- prepare for supplier or customer requests
- support future target-setting

That is why carbon calculation should be viewed not only as an ESG activity, but also as part of better business management.

Why ISO 14064-1 also matters

Alongside the GHG Protocol, another recognised reference is ISO 14064-1.

While the GHG Protocol is widely used to structure organisational emissions into Scope 1, 2, and 3 categories, ISO 14064-1 is also an important standard for quantifying and reporting greenhouse gas emissions at the organisational level.

What matters at the early stage is understanding that carbon calculation should be based on recognised, credible approaches rather than informal estimates.

Businesses do not need perfection on day one

This may be the most important message of all.

A business does not need a perfect carbon inventory to make a good start.

It does not need to measure every possible emission source immediately. It does not need to become overly technical too early. And it does not need to wait until every data point is available before starting.

What it does need is a sensible structure.

That means identifying the main operational activities, collecting usable activity data, applying recognised methods, and building understanding step by step.

In many cases, **starting with electricity**, **fuel,** and a few obvious direct or indirect categories is already a meaningful step.

Carbon measurement is becoming part of business readiness

Carbon calculation is not only about reporting a number. It is about understanding the business more clearly.

A company that starts measuring emissions is often also improving its visibility over energy use, operational patterns, internal records, and resource consumption. That is useful in its own right.

And as expectations continue to grow — from customers, lenders, regulators, and supply chains — businesses that already have some carbon visibility are likely to be in a much stronger position than those starting from zero.

So the most useful advice for many SMEs and smaller PLCs is simple:

Do not wait for carbon calculation to become urgent. Start with the basics, build understanding, and improve over time.

In the next article, the author will explore how businesses can quickly calculate a basic carbon footprint and move from simple carbon calculation towards more useful carbon management.