

Scope 1, 2 and 3 Emissions: What They Mean and How to Manage Them

Canonical: <https://northmoregordon.com/articles/what-are-scope-1-2-3-emissions/>

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Start with the boundary of your business

A business's climate impact extends beyond the fuel burned at its own sites. Electricity generation, purchased materials, transport and the use of products can all contribute. The Greenhouse Gas Protocol groups these emissions into Scope 1, Scope 2 and Scope 3 to help organisations account for them consistently.

Before collecting data, define the organisation or activity being assessed, the reporting period and the accounting framework. Record which entities and operations are included and explain any exclusions. The boundary determines where an emission belongs in the inventory.

Scope 1: direct emissions from owned or controlled sources

Scope 1 includes emissions from sources owned or controlled by the reporting organisation. The original article distinguishes four common categories:

Stationary combustion: fuel burned in equipment such as boilers, furnaces, ovens and dryers.

Mobile combustion: fuel used by owned or controlled vehicles within the reporting boundary.

Fugitive emissions: releases such as refrigerant leakage.

Process emissions: emissions arising from industrial or chemical processes.

Actions should match the source. Fuel efficiency and heat recovery may address combustion emissions; leak management addresses fugitive releases. Process changes and appropriate equipment alternatives need their own technical assessment.

Scope 2: emissions associated with purchased energy

Scope 2 covers emissions from the generation of purchased or acquired electricity, steam, heat and cooling. The emissions occur at the energy producer, while the purchased-energy emissions are accounted for by the customer. The same electricity-generation emissions may therefore be the generator's Scope 1 and the customer's Scope 2.

Energy efficiency can reduce the amount purchased. Renewable-electricity procurement may affect the associated accounting result when it meets the relevant framework's requirements.

GHG Protocol's Scope 2 Guidance distinguishes location-based and market-based reporting. Contractual instruments used in the market-based method must meet quality criteria. Retain the contracts, ownership and retirement evidence needed to support the result, and do not assume that buying an instrument establishes every possible renewable-energy claim.

Scope 3: other upstream and downstream emissions

Scope 3 covers other indirect emissions in the value chain that are outside the organisation's Scope 1 and Scope 2 boundary. Examples include purchased goods and services, relevant transport, business travel, employee commuting, use of sold products and their end-of-life treatment.

The GHG Protocol identifies 15 Scope 3 categories. Screen the relevant categories rather than assuming that a few familiar activities cover the whole value chain. Supplier data, purchasing records and product information can help establish the inventory, with estimates and gaps documented where primary data is incomplete.

Reduction actions can involve procurement choices, materials, packaging, product design, logistics and engagement with suppliers or customers. These sources can be harder to influence directly, which makes clear responsibilities and evidence especially useful.

Build a calculation that can be checked

For each source, identify the activity data, units, applicable emissions factor and calculation. Factors should fit the activity, location, period and chosen method. Keep the original records and document estimates, corrections and exclusions.

Assign data owners and retain a clear record of changes. Distinguish an organisation's inventory from the effect of an individual project. A certificate purchase is another separate record and should not be substituted for evidence of physical reductions at a site.

The appropriate reporting obligations depend on the organisation and framework. Preparing a three-scope inventory does not, by itself, determine every statutory reporting requirement or complete a sustainability report.

Use the inventory to choose and track action

Identify the significant sources, develop practical options and assign responsibility for delivery. Track changes against a consistent boundary and explain any changes in methods or operating conditions.

Keep physical emissions reductions, renewable-electricity attributes and purchased carbon credits distinct. Record the exact claim, period and supporting evidence, including retirement or cancellation where relevant. An offset purchase does not mean that a boiler used less fuel or that a process emitted less within the site's boundary.

Northmore Gordon's carbon advisory services connect emissions accounting with reduction planning. Discuss the inventory or decision your business needs to support .

Related services and guidance

Build an emissions inventory and reduction plan

Understand certificates and carbon credits

Identify operational energy opportunities

Measure project performance

What is the simplest distinction between Scope 1, 2 and 3?

Scope 1 concerns direct emissions from owned or controlled sources. Scope 2 concerns emissions from generating purchased or acquired energy. Scope 3 concerns other relevant upstream and downstream value-chain emissions outside those two categories.

Why can the same electricity be Scope 1 for one company and Scope 2 for another?

The generator directly produces the emissions, while its customer purchases the energy. The scopes describe each organisation's relationship to that source within its own inventory boundary.

Where do refrigerant leaks belong?

Leaks from refrigeration equipment owned or controlled within the reporting boundary are direct fugitive emissions and belong in Scope 1. Their management requires attention to the leakage source, not just electricity consumption.

What if supplier data for Scope 3 is incomplete?

Record the gap, document the basis of any estimate and assign responsibility for improving the evidence. Screen the relevant categories so missing data does not silently become an excluded part of the value chain.

Do carbon credits reduce the fuel consumption shown in an inventory?

No. Credit purchases and their use for a claim are separate from physical fuel use or emissions at the site. Keep the inventory, project reductions and instrument records distinct and apply the relevant reporting framework.

What makes an emissions inventory traceable?

Document the boundary, period, activity data, units, emissions factors, calculations and exclusions. Retain original records and a change log, identify data owners, and explain estimates or corrections.