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Resources for Learning How to Measure Scope 3 GHG Emissions

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Introduction


The purpose of this guide is to share links to resources about Scope 3 greenhouse gas (GHG) emissions. Scope 3 GHG emissions are those that occur in supply chain activities upstream or downstream from your company. For most companies, their Scope 3 emissions are larger than their Scope 1 and 2 emissions, so understanding Scope 3 emissions is necessary both to manage risks and opportunities. Investors and governments are beginning to require disclosure of Scope 3 emissions and risks. If you're a supplier to another business like a retailer, it is likely that those customers will require disclosure of your Scope 1, 2, and 3 emissions.

Step 1: Learn the principles of measuring and managing Scope 3 emissions


If you're not familiar with the concept of GHG emissions or how a company measures its direct, Scope 1 and 2 emissions, it would be useful to start there before learning about Scope 3 emissions. The way a buyer determines its Scope 3 emissions is based on what its suppliers' Scope 1 and 2 emissions are, so understanding how Scope 1 and 2 are measured is fundamental to understanding Scope 3 emissions measurement and goal setting.

Scope 1 GHG emissions are those that come from direct combustion of fuel, for example, in boilers, furnaces, or vehicles. Scope 2 GHG emissions are those associated with purchased electricity.


This guide is organized by the steps involved in measuring Scope 3 GHG emissions:




Learn the principles of measuring and managing Scope 3 emissions. **1**




Determine which sources of Scope 3 emissions are most important to measure. **2**



Determine how to measure Scope 3 emissions. **3**



Collect primary and secondary data and calculate impacts. **4**



Set goals for Scope 3 emissions. **5**



To learn more about Scope 1 and 2 emissions, reference the [Greenhouse Gas Protocol - Corporate Standard](#). This Standard is the foundational guide that almost all other GHG measurement and reporting standards and initiatives build upon. The Standard covers accounting principles, setting boundaries, and tracking and reporting Scope 1 and 2 GHG emissions, and guidance on calculating emissions, managing data quality, accounting for reductions, verification, and target setting. Additional useful sources include the [U.S. Federal GHG Accounting and Reporting Guidance](#), the OECD report [Corporate Greenhouse Gas Emission Reporting: A Stocktaking of Government Schemes](#), and the US EPA's [Simplified Guide to Greenhouse Gas Management for Organizations](#).

In addition to the GHG-specific guidance cited above, a [set of ISO standards](#) provides best practices for implementing any environmental management system. ISO 14001:2015 (Environmental management systems) provides the baseline

standard for measuring and managing environmental outcomes, ISO 14004:2016 provides guidelines on implementation, and ISO 14005:2019 discusses guidelines for phased implementation.

The best starting point to learn about Scope 3 emissions is the [Greenhouse Gas Protocol - Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard](#). Like the Scope 1 and 2 Corporate Standard, it is foundational to almost all other Scope 3 standards and initiatives, so it is recommended as fundamental to your understanding of the principles and norms of measuring Scope 3 emissions. The standard covers the accounting principles of measuring Scope 3 emissions, source identification, boundary setting, data collection, emissions allocation, goal setting and tracking, assurance, and reporting. It includes numerical examples that help you use the standard for emissions calculations. This [page](#) provides information about the online course that the GHG Protocol provides on Scope 3 emissions.



Step 2: Determine which sources of Scope 3 emissions are most important to measure

As the GHG Protocol for Scope 3 outlines, there are many potential sources of Scope 3 emissions. While it may be desirable to eventually capture data about all these sources, it is most useful to concentrate effort on those sources that will contribute the most to the total Scope 3 emissions.

[The CDP - Technical Note: Relevance of Scope 3 Categories by Sector](#) contains data-based recommendations on the activities that are the largest contributors to Scope 3 in different sectors. CDP states, “Based on a review of literature and analysis of 2021 CDP response data, this technical note identifies the relevant and most significant (by size) Scope 3 categories for each of CDP’s high-impact sectors and, where relevant, specific sectoral activities. This technical note signposts the categories of Scope 3 emissions that companies should be measuring and taking action to mitigate.”

This [article](#) from WRI (*Trends Show Companies Are Ready for Scope 3 Reporting with US Climate Disclosure Rule*) summarizes why measuring and disclosing Scope 3 emissions will become a compliance issue given the impending [SEC disclosure regulation in the U.S.](#), and the existing disclosure rules in [EU Corporate Sustainability Reporting Directive](#).

Several consulting companies and NGOs provide brief, useful overviews of what Scope 3 emissions are and how and why they need to be measured: [Carbon Trust](#), [Exponential Roadmap Initiative](#), [KPMG](#), [Persefoni](#), [PwC](#), and [World Economic Forum](#). The Scope 3 [Maturity Benchmark](#) sponsored by Proxima provides an assessment tool that companies can use to benchmark their Scope 3 practices against peer companies.



For most companies within a consumer product supply chain, the largest sources of Scope 3 emissions are purchased goods and services, downstream transportation and distribution, and upstream transportation and distribution. GHG emissions data concerning purchased goods and services is often prioritized by categories and suppliers that have the highest spend, or highest emissions intensity, or highest estimated total emissions.

Step 3: Determine how to measure Scope 3 emissions

As a supplement to the [GHG Protocol - Corporate Value Chain Standard](#), the [Greenhouse Gas Protocol - Technical Guidance for Calculating Scope 3 Emissions](#) provides guidance on how to calculate emissions for the following activities: Purchased Goods and Services, Capital Goods, Fuel- and Energy-Related Activities Not Included

in Scope 1 or Scope 2, Upstream Transportation and Distribution, Waste Generated in Operations, Business Travel, Employee Commuting, Upstream Leased Assets, Downstream Transportation and Distribution, Processing of Sold Products, Use of Sold Products, End-of-Life Treatment of Sold Products, Downstream Leased Assets, Franchises, and Investment.

A useful practical tool to help during implementation is the [WRI - Sustainability Dashboard Methodology](#) which provides a step-by-step best practice recommendations of how to implement the GHG Scope 3 Protocol.

Specifically for retailers, the [IBM/BRC Climate - Monitor, Measure, and Report Supply Chain Scope 3 Emissions: A Retailer's Guide](#) provides a general overview of the steps that retailers need to take to measure their Scope 3 emissions.



There are several sector-specific guides on how to measure Scope 3 emissions:

- [GHG Protocol - Cross-Sector Tools](#) provides a list of calculation tools and guidance documents for specific activities or materials, such as pulp and paper, iron and steel, semiconductors, and wood.
- [WRAP - Courtauld 2030 Scope 3 GHG Measurement and Reporting Protocols for Food and Drink](#) is a set of documents that provide guidance and tools for Scope 3 emissions in the food and drink sector, including retail.
- [WWF - Measuring and Mitigating Greenhouse Gas Emissions for Specific Commodities](#) is a set of provide guidance on measuring and mitigating Scope 3 emissions in Beef, Chicken, Coffee, Maize, Palm Oil, Pulp and Paper, Salmon, Shrimp, Soy, and Tuna.
- [Food and Agriculture Organization of the United Nations \(FAO\) - Livestock Environmental Assessment and Performance \(LEAP\) Partnership](#) provides several guides for measuring different environmental outcomes in livestock operations.
- [EU – Product Environmental Footprint \(PEF\)](#) provides general guidance on calculation of a product's environmental, including carbon, footprint. Product-specific guidance is developed for about 25 product categories and 5 other ones are under development.

There are several activity-specific guides on how to measure Scope 3 emissions:

- [EPA - Renewable Electricity Procurement on Behalf of Others: A Corporate Reporting Guide](#) describes the process where renewable energy certificates (RECs) can be purchased on behalf of supply chain partners to reduce a company's Scope 3 emissions.
- [EPA - Indirect Emissions from Events and Conferences](#) describes how to account for Scope 3 emissions from events and conferences, in terms of travel, hotels, and venues.
- [GRESB – 2023 Supplementary Guidance on Scope 3 Emissions \(infrastructure\)](#) provides guidance on Scope 3 emissions related to infrastructure.
- [Partnership for Carbon Accounting Financials – Financed Emissions](#) covers GHG accounting guidelines for Scope 3 emissions related to financial services, including equity and corporate bonds, business loans and unlisted equity, project finance, commercial real estate, mortgages, motor vehicle loans, and sovereign debt.
- [Partnership for Carbon Accounting Financials – Insurance-Associated Emissions](#) covers GHG accounting guidelines for Scope 3 emissions related to insurance services.
- [UK GBC - Guide to Scope 3 Reporting in Commercial Real Estate](#) for Scope 3 emissions associated with commercial real estate.



Step 4: Collect primary and secondary data and calculate impacts

Once it has been determined what to measure and how to measure it, data must be collected and then used to calculate total Scope 3 GHG emissions. The approach is to measure the amount or level of a specific activity classified as a source of Scope 3 emissions, and then multiply that by an activity-specific emissions factor to estimate total emissions. For example, emissions from business travel would be found by measuring the activity (e.g., total kilometers of air travel) and multiplying it by the emissions factor (e.g., CO₂e tons/air km travelled).

$$\text{GHG Scope 3 emissions} = \text{Level of a Scope 3 activity} * \text{Emissions intensity associated with an activity}$$

The emissions factor will always come from secondary data, but the activity level could be measured by primary or secondary data. Primary data represent direct measurements a company makes (e.g., how many kilometers employees traveled in the past year), while secondary data represent averages within a particular sector or category (e.g., an average kilometers-travelled per employee-year).

The most common use of this equation is to find emissions associated with purchased goods or services,

$$\text{GHG Scope 3 emissions from a purchased good or service} = \text{Amount purchased} * \text{GHG emissions per unit purchased}$$

The “amount purchased” can be stated in terms of monetary spend, number of units purchased, or mass of supply purchased.

[The WBCSD - Pathfinder Framework](#) provides comprehensive guidance on the accounting and exchange of product life cycle emissions. It is useful in understanding how different primary and secondary data can be used to calculate and verify a product’s carbon footprint, or in general, Scope 3 emissions within the life cycle of a product. It contains decision trees to choose which data to use, and addresses data quality issues.



Some of the Scope 3 activity categories involve collecting data that is likely within the company's ownership (e.g., amount spent on purchased goods and services), while other activity categories may require data to be collected (e.g., upstream and downstream transportation and distribution) that is within the supply chain. In these cases, primary data could be collected from an upstream or downstream supplier or customer, or secondary data may indicate the average activity level within a sector or category (e.g., average distance travelled from farm to retailer).



There are several sources for sector or activity specific emissions factors:

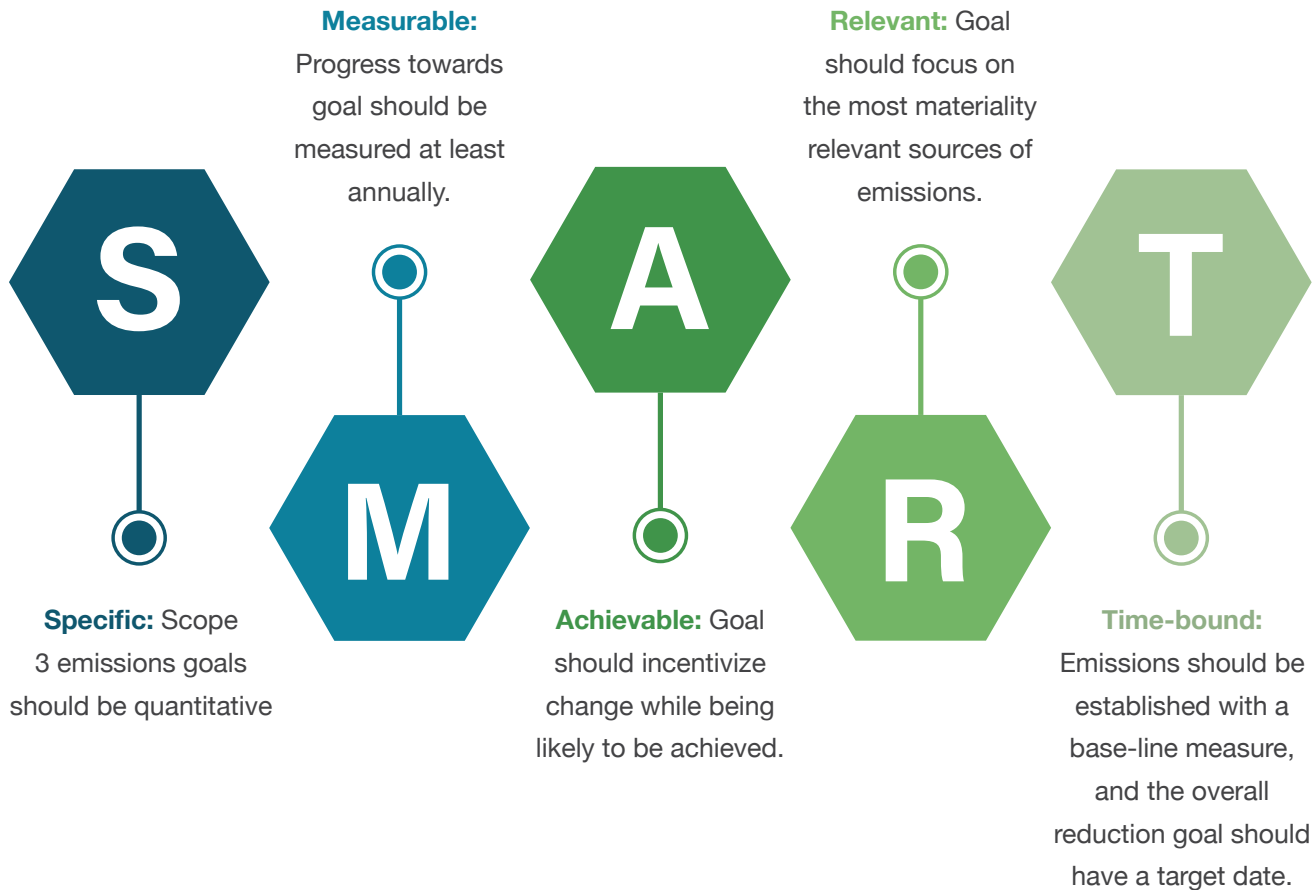
- [EPA – Scope 3 Inventory Guidance \(Sector level\)](#) provides a brief overview of the GHG Protocol and the process to estimate emissions. On this [page](#), there are numerous links provided to a report on sector-level emissions factors within the U.S., and on this [page](#), a spreadsheet contains “greenhouse gas (GHG) emission factors (Factors) for 1,016 U.S. commodities as defined by the 2017 version of the North American Industry Classification System (NAICS). The Factors are based on GHG data representing 2019.” This page provides similar data broken down by BEA industry categories.
- [EPA - ENERGY STAR Scope 3 Use of Sold Products Analysis Tool](#) allows you to estimate downstream emissions associated with commonly used electronics and powered appliances.
- [GHG Protocol - Life Cycle Databases](#) provides a list of third-party databases that provide emissions factors for estimating Scope 3 emissions.
- [WRAP - Courtauld 2030 Scope 3 GHG Measurement and Reporting Protocols for Food and Drink](#) provides an extensive database of emissions factors for food and beverage items in the UK.
- [OpenLCA Nexus](#) features numerous commercial and non-profit third parties that offer LCA databases covering GHG emissions for nearly all food and consumer products.
- [U.S. EPA - Environmentally-Extended Input-Output \(EEIO\) page](#) provides several resources, including the [data tables](#).

Several LCA consultants offer large databases with average emission factors for many different activities and products. These are not freely available, and quality, completeness and depth differ widely.



Step 5: Set goals for Scope 3 emissions

Research has shown that reduction of Scope 3 emissions is most likely to occur when a company sets a publicly declared emissions reduction target, and then measures and discloses progress towards that goal. Like any organizational goal, an emissions reduction goal should be *SMART*:



Many companies are using [SBTI – Science Based Targets Initiative](#) to create SMART GHG emissions reduction goals. SBTI drives ambitious climate action in the private sector by enabling organizations to set science-based emissions reduction targets.” The SBT methodology provides a company a systematic way to set an emissions reduction target aligned with planetary boundaries, including Scope 3. SBTi also includes sector specific guidance in Apparel and Footwear, Forest, Land and Agriculture, Information and Communication Technology, Steel, and Transport, and guidance for SMEs.



Summary

In this Guide, we have provided sources to help your company learn how to determine what Scope 3 emissions to measure, how to measure them, what data is needed, and how to set emissions reduction goals. The principles and general methods used to measure Scope 3 emissions will likely not change much, so those types of sources provided here have longevity.

The three areas where change will be more dynamic, and thus your company should allocate effort to keeping up to date on new developments, are:

- Innovative ways, including AI, to capture primary data about emissions-related activities, across supply chains and including consumer use-related emissions.
- More B2B customers, investors, and policy regulators requesting or requiring Scope 3 emissions disclosure.
- An increased interest to measure “Scope 3” for other environmental impacts, e.g., water use or material-specific resource extraction.

Help for retailers

If you're a retailer, [The Sustainability Consortium](#) (TSC) can help you collect primary data to measure

your Scope 3 emissions. TSC's THESIS, facilitated by [SupplyShift's reporting platform](#), has been used by over a dozen of the world's top retailers. THESIS enables one-to-many data sharing, where a consumer goods company can assess the sustainability of their product categories and share that information with multiple retailers.

For a retailer, TSC's KPI provide a retailer primary data to calculate Scope 3 emissions associated with purchased goods and up/down stream transportation. It also has KPIs which capture emissions directly associated with on-farm or grower-related emissions for agricultural products.

About TSC

The Sustainability Consortium (TSC) is a global organization transforming the consumer goods industry to deliver more sustainable consumer products. We work to enable a world where people can lead fulfilled lives in a way that decouples their impacts on people and the planet. Our members and partners include manufacturers, retailers, suppliers, service providers, NGOs, civil society organizations, governmental agencies and academics.

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