



Module 3

Scope 3 Emissions Accounting

in partnership with



and



Welcome to Module 3: Scope 3 Emissions Accounting

Before we start our training, please find the keys to our interactive PDF.

 Previous page	 Expand window	 Key concepts	 Further resources
 Home	 Minimize window	 Steps needed to prepare for accounting emissions	
 Next page	 Click here for more information	 Check out this video	

Welcome to Module 3: Scope 3 Emissions Accounting

We estimate this module will take 35 minutes for a first read-through (excluding the **Appendix**). It can then be used as a step-by-step guide as you complete your Scope 3 emissions accounting.

This module will take you through the step-by-step process for accounting for your company's Scope 3 GHG emissions. As a reminder, Scope 3 emissions are all other emissions that aren't included in Scope 1 or 2. These emissions are "indirect" because they fall outside of a company's direct control.

All companies have value chains; therefore, they will have Scope 3 emissions.

Things to know about Scope 3 Emissions Accounting

Before you get started, it's important to know that Scope 3 emissions are much more complicated to account for than Scope 1 & 2 emissions. The purpose of accounting for these emissions isn't to get the "perfect" inventory. For most companies, Scope 3 emissions accounting will be a journey during which their emissions inventories get more comprehensive and granular over time.

For this reason, this training focuses on providing a high-level introduction to evaluating emissions across your company's value chain. This will help you identify emissions hotspots so that you can figure out how to start managing the associated risks. We provide the most basic calculation approaches in the core portion of the module. However, if you feel ready to explore more granular calculation approaches, we've included this information in an **Appendix** to this module.

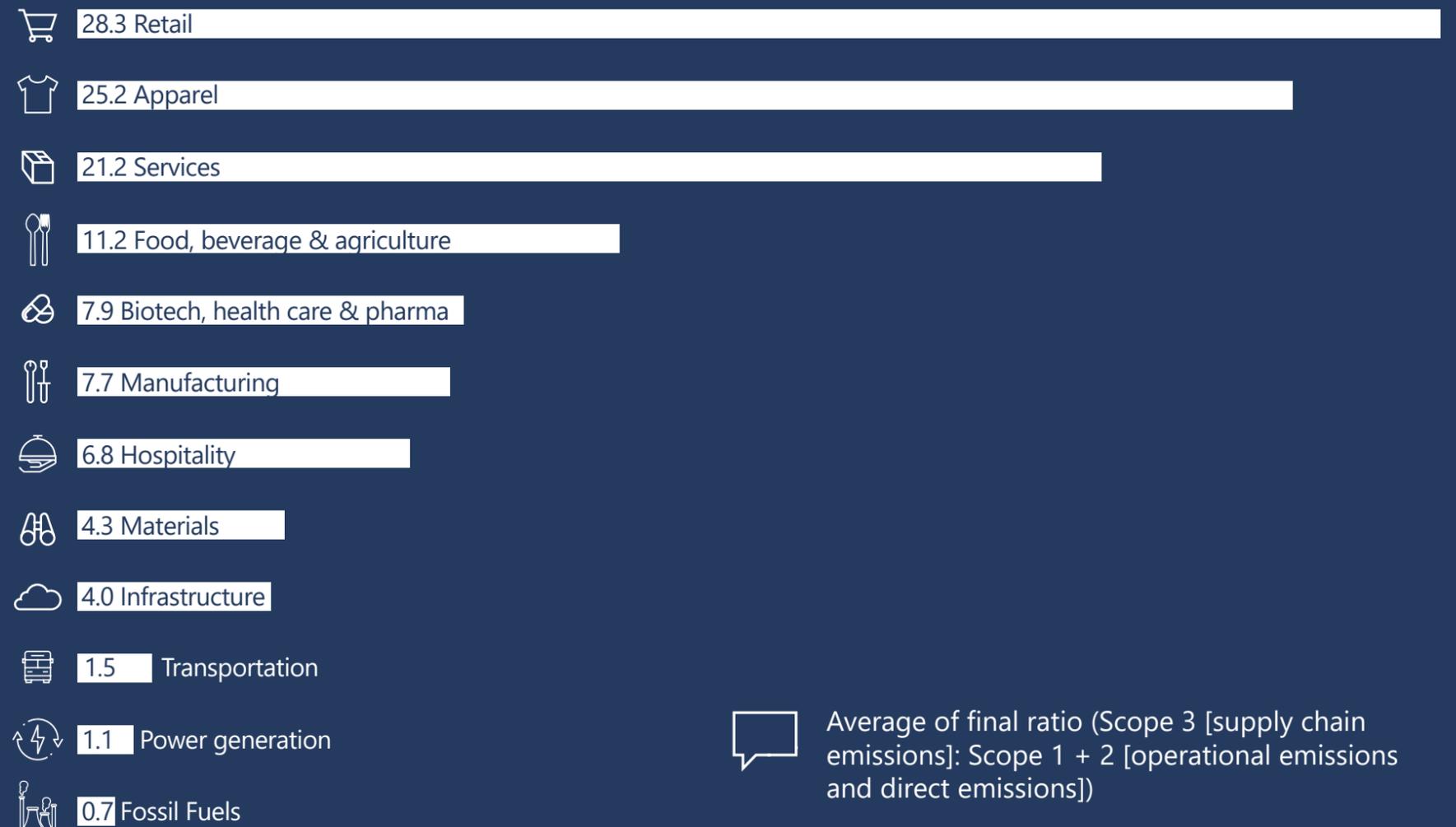
Things to know about Scope 3 Emissions Accounting

It's also helpful to know that Scope 3 emissions are typically much larger than Scope 1 & 2 emissions. This is because they are the emissions across your entire supply chain.

In fact, upstream supply chain emissions are on average 11.4 times higher than operational (Scope 1 & 2) emissions.

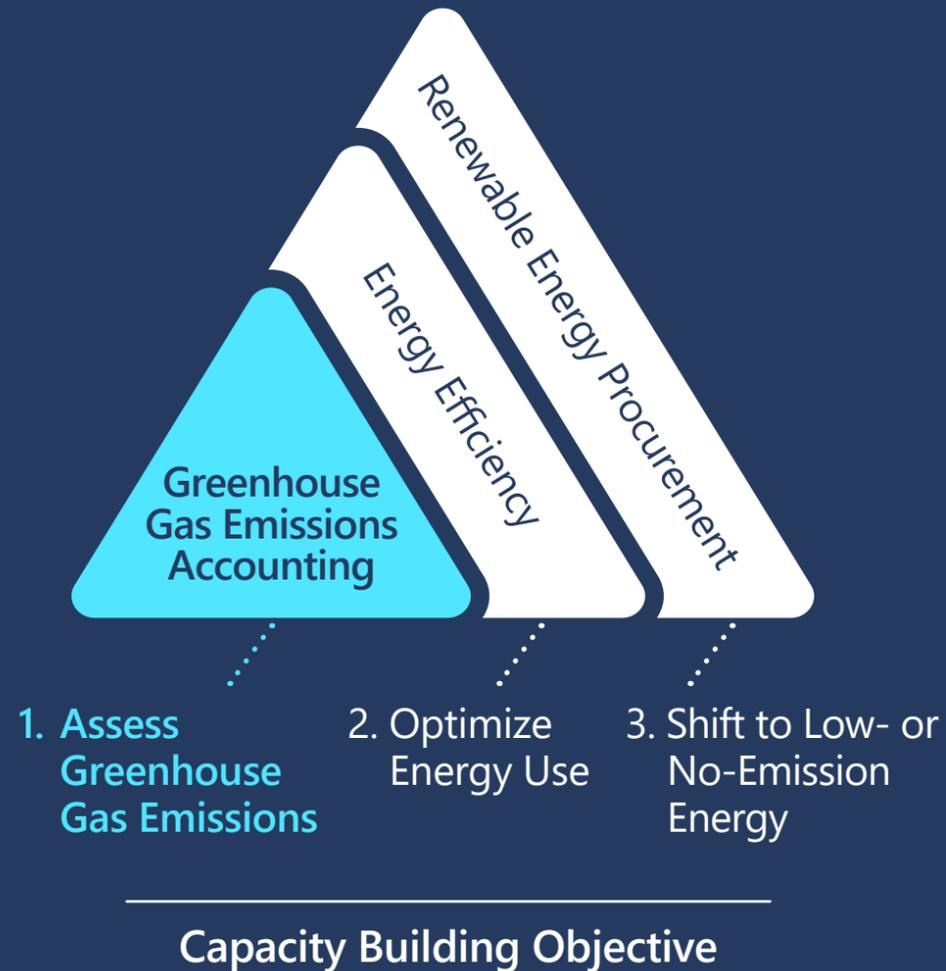
The graph to the right shows a sector-specific perspective of this same metric. The retail, apparel and services sectors have some of the highest ratios of Scope 3 supply chain emissions to Scope 1 & 2 emissions.

Upstream emissions: Scope 3 emissions are on average 11.4 times higher than operational emissions



Average of final ratio (Scope 3 [supply chain emissions]: Scope 1 + 2 [operational emissions and direct emissions])

Learning objectives



In this module, you will learn:

- The importance of accounting for Scope 3 emissions
- How Scope 3 emissions are categorized, and how to identify which Scope 3 categories are relevant to your company
- How to start measuring and reporting on your Scope 3 footprint
- What other estimation methods exist to refine your Scope 3 footprint

This training is the first part of a capacity building series on reducing energy-related greenhouse gas emissions

Once you complete this module, the following module remains:

Module 4

Emissions
Reductions
101

Terms to know before you get started

Let's get started with a high level overview

This module is divided into two sections that will help you understand the fundamental concepts for Scope 3 emissions accounting:

Section 1:
Scope 3 foundations

Section 2:
Estimating Scope 3 emissions

Section 1: Scope 3 foundations

The purpose of Scope 3 accounting is to understand and measure your company's value chain

Estimating Scope 3 emissions better evaluates the impact of your activities on your value chain and helps reduce the carbon and environmental footprint of your value chain. This can help drive a "ripple effect" with other companies both upstream and downstream in your value chain.



The importance of understanding your company's value chain

At its core, Scope 3 emissions accounting is really about understanding your company's value chain and its GHG emissions. Therefore, before you dive into the module content, we suggest that you start by drawing out your company's value chain (both upstream and downstream) at a high level. Questions that might help you do this include:

- ✓ What products or services does your company sell?
- ✓ How does your company get inputs to create the products and services it sells?
- ✓ How do your company's products or services get to customers?
- ✓ How do customers use your company's products?



Use the mapping you created from the previous page and think about how it maps to each of these 15 GHG Protocol Scope 3 categories:

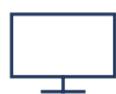
→ Upstream

Indirect emissions from purchased or acquired goods and services

-  Purchased goods and services
-  Fuel and energy related activities
-  Waste generated in operations
-  Employee commuting
-  Capital goods
-  Upstream transportation and distribution
-  Business travel
-  Upstream leased assets

Downstream →

Indirect emissions related to sold goods and services

-  Downstream transportation and distribution
-  Use of sold products
-  Downstream leased assets
-  Investments
-  Processing of sold products
-  End-of-life treatment of sold products
-  Franchises

If Scope 3 emissions are beyond the control of my company, why should I account for them?

There are several benefits of accounting for Scope 3 GHG emissions. These include:

1. Managing risks in your company's value chain

2. Setting credible and comprehensive decarbonization goals across all scopes of emissions

3. Helping catalyze decarbonization across your value chain

Benefit 1 **Managing risks in your company's value chain**

Measuring your Scope 3 emissions can help you better identify and manage value chain risks.

The physical and transition risks associated with climate change can impact the operational resilience of companies. Conducting a Scope 3 assessment will give you a better sense of where your company is exposed to these risks. Identifying high GHG emissions hotspots allows companies to engage with key suppliers, manage risks more effectively and work to reduce their emissions.



**Benefit
2** **Setting credible and comprehensive decarbonization goals across all scopes of emissions**

An understanding of your company's Scope 3 emissions is necessary for setting a credible and comprehensive decarbonization goal.

Benefit
3

Catalyzing decarbonization across your value chain

From suppliers and distributors to customers and employees

Understanding your own company's Scope 3 emissions unlocks the opportunity to engage with stakeholders across your value chain to collectively drive decarbonization.

Section 2: Estimating Scope 3 emissions

A five-step approach to getting started on measuring and reporting on your Scope 3 footprint:

1. Screen Scope 3 Categories

Identify which Scope 3 categories apply to your company.

2. Select the Estimation Method(s)

For each category selected in Step 1, choose the estimation method based on data available.

3. Collect Activity Data

For each category selected, collect the activity data based on the estimation method selected in Step 2.

4. Estimate Scope 3 Emissions

Select a free online tool or database to estimate Scope 3 emissions.

5. Consolidate Scope 3 Footprint

Sum the estimates of the selected Scope 3 categories and report on your Scope 3 footprint.



Note: The purpose of this module is to learn how to do a **Scope 3 estimation** for GHG disclosure purposes, not to develop a formal **Scope 3 inventory**. If your company is new to GHG accounting, Scope 3 estimation is a great way to get started. For further guidance on how to develop a Scope 3 inventory, please refer to the **GHG Protocol Corporate Value Chain (Scope 3)**.

Step 1 Screen Scope 3 categories

Understanding which Scope 3 categories apply to your company

Every Scope 3 category won't necessarily apply to your company. For instance, the category "Investments" won't apply if your company does not have any investment activity, so you won't need to estimate the Scope 3 emissions associated with this category.

Setting Scope 3 boundaries consists of identifying which of the 15 Scope 3 categories are relevant to you company.

There are six criteria that are used to determine which Scope 3 categories need to be included:

Magnitude

How much do they contribute to your total anticipated Scope 3 emissions?

Stakeholders

Are they deemed critical by key internal/external stakeholders?

Influence

Do they offer potential emissions reductions that could be undertaken or influenced by your company?

Outsourcing

Were these outsourced activities previously performed in-house or are they performed in-house by other companies in same sector?

Risk

How do they contribute to your company's risk exposure?

Sector Guidance

Is this identified as significant by sector specific guidance?

Step 1 Screen Scope 3 categories

Relevance and materiality

Consider the relevance and the materiality of each category to your business. First, think about whether a category is relevant. If you determine it is relevant, then think about whether it is material. The next few pages will help you determine the relevance and materiality of each category for your company.

Step 1 Screen Scope 3 categories

A few business situations to help you define which upstream categories are relevant to your business:

→  **Upstream Categories**

 Purchased goods and services	 Capital goods	 Fuel- and energy related activities	 Upstream transportation and distribution	 Waste generated in operations	 Business travel	 Employee commuting	 Upstream leased assets
Applies to your company when...							
Always applies	Always applies	Always applies unless already covered under Scope 1 and 2	Applies if you <u>pay</u> third-party logistics services to move purchased goods from your tier 1 suppliers to your facilities and/ or to move your sold products to customers	Always applies	Always applies	Always applies	Applies if you lease upstream assets <u>and</u> you use an Equity Share or Financial Control approach to estimate your Scopes 1+2 (Note: rare situation)

*List is non-exhaustive

Step 1 Screen Scope 3 categories

A few business situations to help you define which downstream categories are relevant to your business:

Downstream  →						
 Downstream transportation and distribution	 Processing of sold products	 Use of sold products	 End-of-life treatment of sold products	 Downstream leased assets	 Franchises	 Investments
Applies to your company when...						
You <u>do not</u> pay third-party logistics services to move your sold products to customers.	You sell intermediate products that undergo further processing by any third-parties. Fairly uncommon and most applicable to manufacturing companies (e.g., producing plastic resins from raw plastics).	You sell products that directly consume energy or products that are fuels or feedstocks (e.g., automobiles, engines, power plants, buildings, appliances, software, etc.)	You sell products that require waste disposal (landfilling, recycling, composting) at the product end-of-life. Almost guaranteed source of emissions if the “use of sold products” Scope 3 category is material to your company.	You own and operate any assets that are leased to third-parties. Not common: some companies lease a small portion of their owned buildings to other tenants but Scope 1 and 2 might be already accounting for it since submetering is not prevalent (e.g., REITs).	You own and operate any franchises. Typical examples include restaurant chains.	You have investments that generate profit (e.g., equity/debt investments, project finance, equity in other companies including start-ups and joint ventures, governance bonds/T-bills). Targets financial institutions as well as companies with any investment activity.

*List is non-exhaustive

Step 1 Screen Scope 3 categories

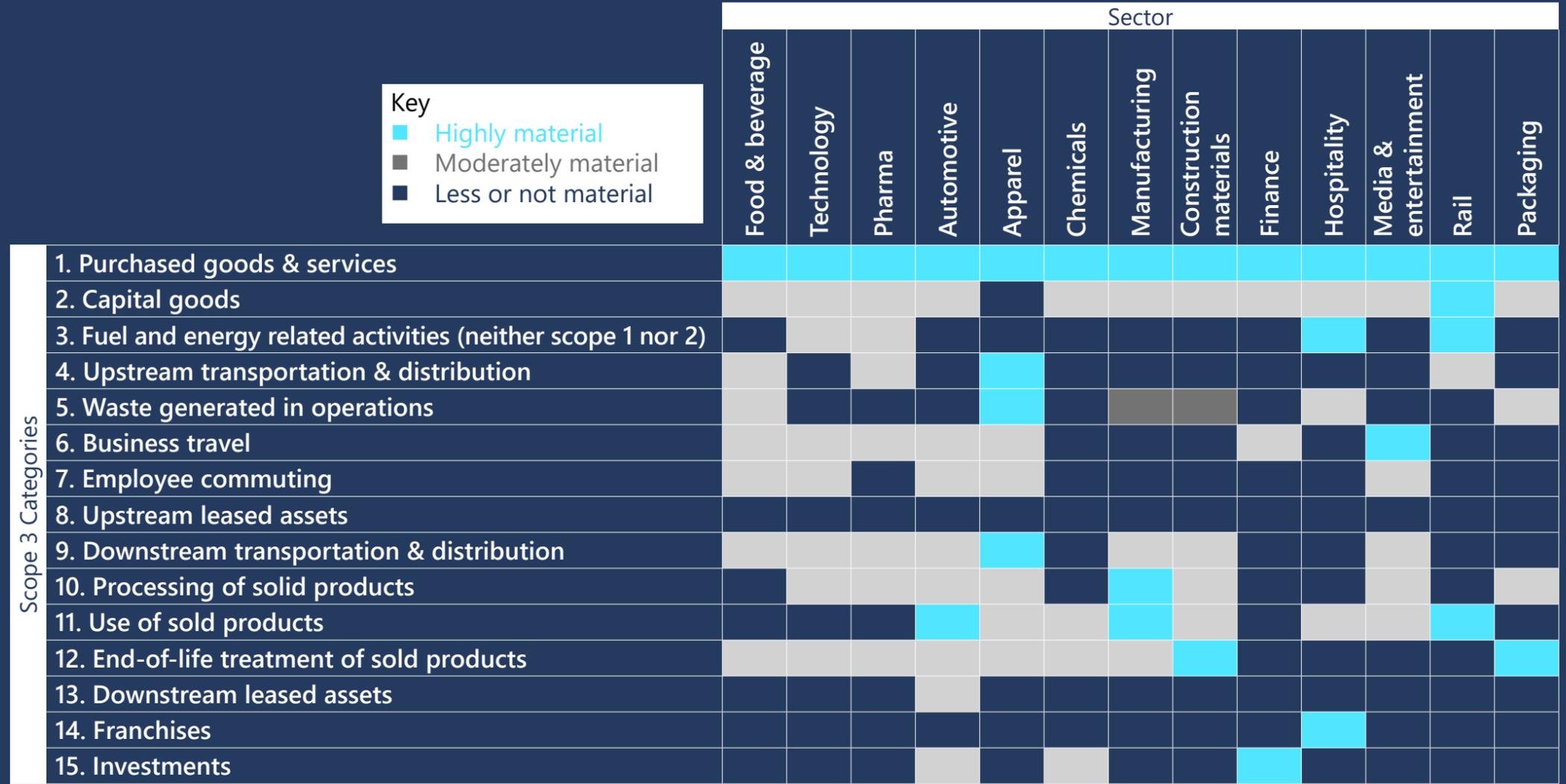
A high-level sectorial scan using the Scope 3 materiality heatmap below may help you define the level of materiality, thus prioritizing estimation efforts

What is the Scope 3 materiality heatmap?

- A tool developed by ENGIE Impact using the CDP 2019 dataset to identify categories typically most material for a given sector

How do I use this heatmap?

- Look up the sector that best describes your company's activity
- Check the relevance of these categories based on the preliminary list you constructed



Source: CDP 2019 data and ENGIE Impact analysis

For informational purposes only. Not legal advice or counsel.

Step 2 **Select the estimation method(s)**

There are four main methods to estimating GHG emissions

GHG emissions are estimated by multiplying activity data (e.g., what distance do your trucks cover) by an emissions factor (e.g., average GHG emission by mile/km). There are four main methods, presented here from most complex and accurate to least. All four methods are recognized by the GHG Protocol. You must choose a method for each category.

	GHG Estimation Method	Description
Most complex and accurate	Supplier-specific	Relies exclusively on emissions and emissions factors provided by suppliers/ lessors/investors
	Hybrid	Relies on a combination of emissions and emissions factors provided by supplier/lessor/investor default data
Least complex and accurate	Average-data	Relies on average consumption and default emissions factors by activity (e.g., expressed in kgCO2e per mile/km for commute)
	Spend-based	Relies on activity data from your company's general ledger and industry average emissions factors

Step 2 **Select the estimation method(s)**

The spend-based and average-data methods are usually the easiest methods to use as a starting point

The table below shows the simplest calculation method for each Scope 3 category. To learn more about additional complex calculation methods for each category, visit the [Scope 3 Appendix](#).

Scope 3 categories	Simplest method	See Appendix page
1. Purchased goods and services	Spend-based	3
2. Capital goods	Spend-based	5
3. Fuel and energy related activities	Spend-based	7
4. Upstream transportation & distribution	Spend-based	9
5. Waste generated in operations	Spend-based	12
6. Business travel	Spend-based	14
7. Employee commuting	Average data	16
8. Upstream leased assets	Average data	19

Scope 3 categories	Simplest method	See Appendix page
9. Downstream transportation & distribution	Spend-based	21
10. Processing of solid products	Average data	24
11. Use of sold products	Average data	26
12. End-of-life treatment of sold products	Average data	28
13. Downstream leased assets	Average data	29
14. Franchises	Average data	31
15. Investments	Average data	33

Step 2 **Select the estimation method(s)**

How does the spend-based method work?

This method is relatively straightforward and is similar conceptually to the calculation methods used for Scope 1 and 2 emissions accounting.

This method entails doing the following multiplication:

$$\text{Amount spent} \times \text{Emissions factor} = \text{GHG emissions}$$

↑
Expressed in relevant currency (e.g., USD, euro, yen).

You can get this from your company's general ledger or from your finance or procurement team.

↑
Expressed in kgCO₂e per unit of currency

You can get this from an emissions factor database or calculation tool.

↑
This is the answer for a specific spending category (e.g., IT equipment, consulting services).

To get the total GHG emissions for a Scope 3 category, sum the GHG emissions of each spending category.



Remember – It's essential that you get your units of measure right.

Step
2

Select the estimation method(s)

Illustration of how the spend-based method works with a purchased good (Category 1)

Example: In year N, your company purchased new laptops for a total amount of spend of \$20,000.

Using the spend-based method, emissions associated with the purchasing of the laptops in year N are estimated at:

$$\begin{array}{l} \text{Amount spent on} \\ \text{laptops in year N} \\ \text{(Provided by procurement team)} \end{array} \times \begin{array}{l} \text{Emissions factor} \\ \text{associated} \\ \text{with laptops} \\ \text{(Extracted from the U.S. EPA} \\ \text{Supply Chain database*)} \end{array} = \begin{array}{l} \text{GHG emissions from} \\ \text{the purchase of laptops} \\ \text{(Result in year N)} \end{array}$$

$$\begin{array}{l} \$ 20,000 \\ \times \\ 0.48 \text{ kgCO}_2\text{e}/\$ \end{array} = \begin{array}{l} 9,600 \text{ kgCO}_2\text{e} \\ \text{(result in year N)} \end{array}$$

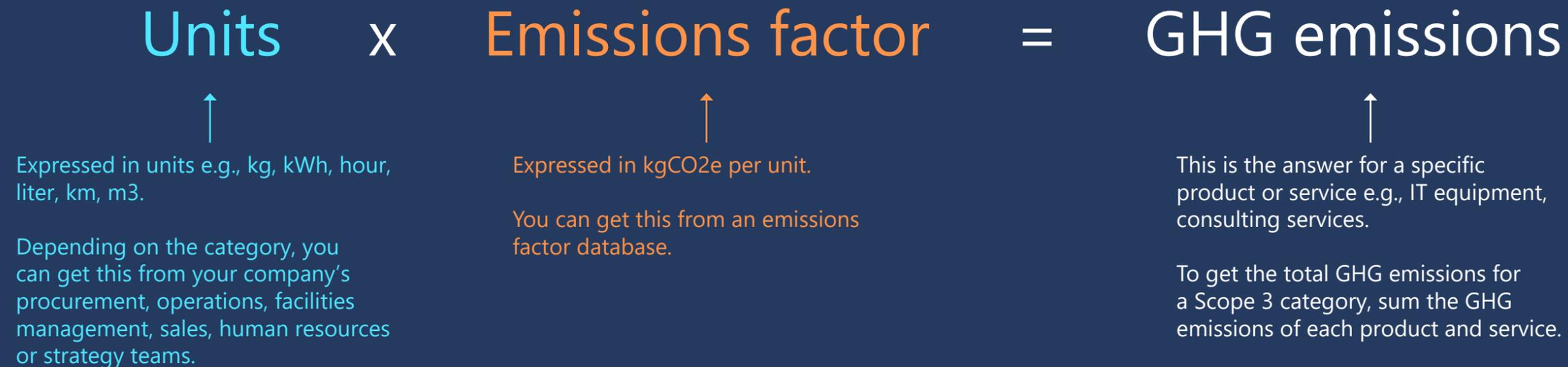
*More details on emissions factor databases are provided later in the module

Step 2 **Select the estimation method(s)**

How does the average-data method work?

This method is slightly more complex since it relies on more granular activity data and emissions factors.

This method entails doing the following multiplication:



Remember – It's essential that you get your units of measure right.

Step 2 **Select the estimation method(s)**

Illustration of how the average-data method works with the recycling of paper (Category 5)

Example: In year N, your company reaches its goal of recycling 100% of the paper consumed over the year, which represents 3 short tons. The majority of the paper is used by its offices activities.

Using the average-data method, emissions associated with the recycling of the paper in year N are estimated at:

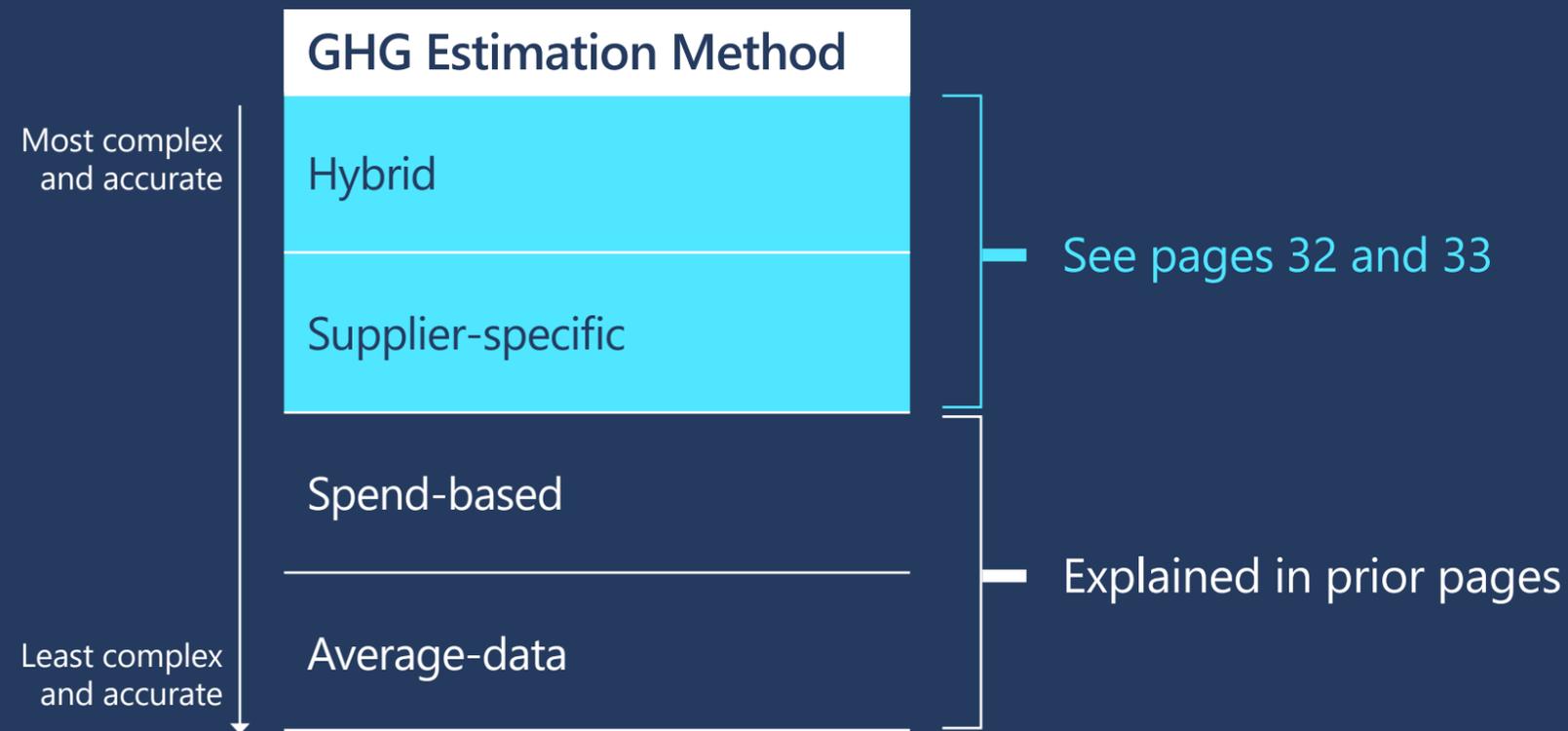
$$\begin{array}{l} \text{Mass of mixed paper} \\ \text{consumed in year N} \\ \text{(Provided by Procurement team)} \end{array} \times \begin{array}{l} \text{Emissions factor} \\ \text{associated with the} \\ \text{recycling of paper} \\ \text{(Extracted from the U.S. EPA Emissions} \\ \text{Factors for GHG Inventories database*)} \end{array} = \begin{array}{l} \text{GHG emissions from} \\ \text{the recycling of paper} \\ \text{(Result in year N)} \end{array}$$

$$3 \text{ short tons} \times 0.03 \text{ tCO}_2\text{e/short tons} = 0.09 \text{ tCO}_2\text{e} \\ \text{(result in year N)}$$

**More details on emissions factor databases are provided later in the module*

Step 2 **Select the estimation method(s)**

Want to consider the most advanced methods? We encourage you to read about the hybrid and supplier-specific methods covered on the next few pages.



Step
2

Select the estimation method(s)

The hybrid and supplier-specific methods rely on emissions factors provided by value chain partners

Under the hybrid and supplier-specific methods, each emissions factor used is unique to a value chain partner.

There are three main ways to collect these emissions factors:

1. By looking up supplier-specific GHG inventory reports (e.g., supplier website, GHG disclosure programs such as CDP)
2. By requesting the supplier-specific emissions factor through a third-party platform (e.g., SupplyShift, EcoVadis)
3. By directly asking the supplier (e.g., during business reviews, direct emails)

Step
2

Select the estimation method(s)

Illustration of the hybrid and supplier-specific methods with purchasing of goods and services

Step 3 Collect activity data

There are many types of activity data across the Scope 3 categories

Below we show what activity data is required for the simplest estimation methods. We also give an indication of where at your company to find this data.

Scope 3 categories	Simplest method	Activity data required	Where to find this data?
1. Purchased goods and services	Spend-based	Quantity of money spent	Finance, Procurement
2. Capital goods	Spend-based	Quantity of money spent	Finance, Procurement
3. Fuel and energy related activities	Spend-based	Quantity of money spent	Finance, Procurement
4. Upstream transportation & distribution	Spend-based	Quantity of money spent	Finance, Procurement
5. Waste generated in operations	Spend-based	Quantity of money spent	Finance, Procurement
6. Business travel	Spend-based	Quantity of money spent	Finance, Procurement
7. Employee commuting	Average data	Number of employees	Human Resources
8. Upstream leased assets	Average data	Floor space of each leased asset	Operations, Facilities Management
9. Downstream transportation & distribution	Spend-based	Quantity of money spent	Finance, Procurement
10. Processing of solid products	Average data	Mass of intermediate products sold (e.g., in kg)	Sales, Business Development
11. Use of sold products	Average data	Number of products sold	Sales, Business Development
12. End-of-life treatment of sold products	Waste-type-specific	Mass of sold products per waste treatment method	Sales, Business Development
13. Downstream leased assets	Average data	Floor space of each leased asset	Operations, Facilities Management
14. Franchises	Average data	Investee company total revenue	Finance, Strategy
15. Investments	Average data	Project construction cost and revenue	Finance, Operations

Step 4 Estimate Scope 3 emissions

A selection of online tools easily convert activity data into GHG emissions estimates

The table below provides a selection of GHG emissions calculation tools that are user friendly and rigorous (both in .xls format). Neither covers all Scope 3 categories, so multiple tools may need to be used depending on which categories are most material for your organization. For tools specific to certain categories, you may also want to refer to the GHG Protocol website which provides more tools and databases. (See more details on the next two pages.)

Tool	Coverage	What we like about it
GHG Emissions Calculation Tool (GHG Protocol)	<ul style="list-style-type: none">▪ Beta testing version: Categories 4, 6, 7 only▪ Global coverage▪ Beta testing phase as of May 2021	Strictly follows the GHG Protocol, also covers Scopes 1 and 2
U.S. EPA Simplified GHG Emissions Calculator	<ul style="list-style-type: none">▪ Categories 3, 5, 6, 7, 9, 12, only▪ U.S. coverage (can be extrapolated to world)▪ Latest update 2020	Also covers other sustainability metrics (e.g., water supply, hotel stay, wastewater treatment)

The above list is non-exhaustive. More tools and databases are listed on the GHG Protocol website.

Step 4 Estimate Scope 3 emissions

Use emissions factor databases to supplement the tools described on the previous page

Emissions factor databases consolidate emissions factors sourced from literature, academic and laboratory research-based content, and primary industry data.

Most databases are specific to a country or region. A database does not necessarily cover emissions factor needs for all Scope 3 categories, so you may have to rely on several emissions factor databases.

Before using a database, its documentation should be reviewed for transparency, completeness and applicability to the GHG inventory for which the data is being collected. For example, a database may contain combustion-only emissions factors that are not applicable to product life cycle emissions calculations.

Step 4 Estimate Scope 3 emissions

The following list of emissions factor databases can supplement the tools described on page 35

The following list is a selection of databases, with their main topics:

<p>Ecoinvent (World):</p> <p>Electricity, fuels, chemicals, transport, products, waste diversion</p>	<p>DEFRA (UK):</p> <p>Electricity, fuels, transportation (road, rail, air), hotel stay, water supply, wastewater treatment</p>	<p>Base Carbone (France, Europe):</p> <p>Electricity, fuels, refrigerants, goods transport, passenger transport, purchase of goods and services, waste treatment</p>	<p>U.S. EPA Supply Chain (U.S.):</p> <p>Purchase of goods and services, upstream transportation and distribution</p>	<p>U.S. EPA Emissions Factors for Greenhouse Gas Inventories (U.S.):</p> <p>Waste treatment, transportation (road, rail, air)</p>	<p>GaBi LCA Databases (World):</p> <p>Energy, materials across a variety of sectors (agriculture, building, consumer goods, healthcare, electronics, services, transport and storage, waste treatment.</p>	<p>International EPD System (World):</p> <p>Wide range of products</p>	<p>India LCA Directory (India):</p> <p>Specific case studies (e.g., glass, fuels, waste management)</p>
---	---	---	---	--	---	---	--

Note that this tool is partly free.

Step 4 Estimate Scope 3 emissions

Here is an example of how you could use an emissions factor data base

The U.S. Environmental Protection Agency Supply Chain (Ingwersen & Li, 2020) is a national database that provides spend-based emissions factors relevant for the calculation of Scope 3 emissions associated with purchased goods and services (Category 1) and Capital Goods (Category 2).

These emissions factors were calculated for the U.S. economy and are the most relevant for your company's suppliers that are based in the U.S. Make sure you are transparent with the data sources if you decide to use this dataset for suppliers based outside the U.S.

The following table provides consolidated emissions factors for a selection of products that are commonly purchased by companies in the services sector:

Product Classification <i>Industry to which your company's supplier belongs</i>	Spend-based Emissions Factor in 2020 <i>Expressed in kgCO₂e/USD</i>
Computers	0.48
Wireless communications	0.21
Office furniture and custom architectural woodwork and millwork	0.39
Office supplies (except paper)	0.51
Stationery	0.46
Warehousing	0.62
Management consulting	0.07
Office administration	0.08
All other food and drinking places	0.29
Light bulbs	0.44

For more details on how to navigate emissions factors databases, please refer to the emissions factor tutorial video

Source: U.S. EPA

Step 4 Estimate Scope 3 emissions

If you're more advanced, navigate to our **Appendix** for detailed guidance on more granular Scope 3 estimation methods

1. Purchased Goods
2. Capital Goods
3. Fuel/Energy-related activities
4. Upstream Transport
5. Waste Generated in Operations
6. Business Travel
7. Employee Travel
8. Upstream Leased Assets
9. Downstream Transport
10. Processing of Sold Products
11. Use of Sold Products
12. End-of-Life Treatment
13. Downstream Leased Assets
14. Franchises
15. Investments

Step 5 Consolidate Scope 3 footprint

Once you're done calculating, you'll need to consolidate and share your Scope 3 footprint

Congratulations! You've completed Module 3: Scope 3 Emissions Accounting

Now that you've completed this module you should understand:

- ✓ Scope 3 emissions cover a broad range of indirect emissions that occur upstream and downstream your value chain.
- ✓ These emissions are classified in 15 categories. Not all 15 categories are necessarily relevant to your company.
- ✓ There are generally five steps to estimating your Scope 3 footprint:
 - ✓ **Step 1: Screen Scope 3 categories:** Identify which Scope 3 categories are relevant to your company and prioritize estimations based on materiality
 - ✓ **Step 2: Select the estimation method(s):** For selected categories, estimate Scope 3 emissions based on data availability
 - ✓ **Step 3: Collect activity data:** For each category selected, collect the activity data based on the estimation method selected in Step 2
 - ✓ **Step 4: Estimate Scope 3 emissions:** Select an online tool or a database to estimate Scope 3 emissions
 - ✓ **Step 5: Consolidate Scope 3 footprint:** Sum the estimations of the selected Scope 3 categories and report on your Scope 3 footprint

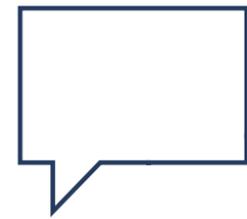
Congratulations! You've completed Module 3: Scope 3 Emissions Accounting

You now have a solid foundation to prepare your company's emissions footprint covering Scopes 1-2-3.

The next and final module will introduce you to some of the foundational concepts to begin reducing emissions at your company

Module 4

Emissions
Reductions
101



Looking for additional support?

Check out CDP's list of
accredited solutions providers

