



How to Calculate Scope 1+2 Emissions

Guidance for Suppliers

July 2022



Anti-trust statement

Brief statement from the U.S Securities Exchange Commission (SEC)

This meeting shall not result in any discussion, activity or conduct that may violate any applicable competition law. By way of example, participants shall not discuss, communicate, or exchange any commercially sensitive information, including information relating to pricing, marketing and advertising strategy, costs and revenues, trading terms and conditions with third parties, including purchasing strategy, terms of supply, trade programs, or distribution strategy. If any participant has any question regarding the legality of proposed discussion the subject discussion should stop immediately, and participant should consult its own legal counsel. PepsiCo accepts no responsibility for the actions of any participants that disregard this notice.

Acknowledgement

This guidance is adapted from the Supplier Leadership on Climate Transition (SLoCT) program co-founded by PepsiCo and other brands and coordinated by Guidehouse, and Microsoft's GHG accounting training to suppliers which Microsoft developed in partnership with CDP and Engie Impact.

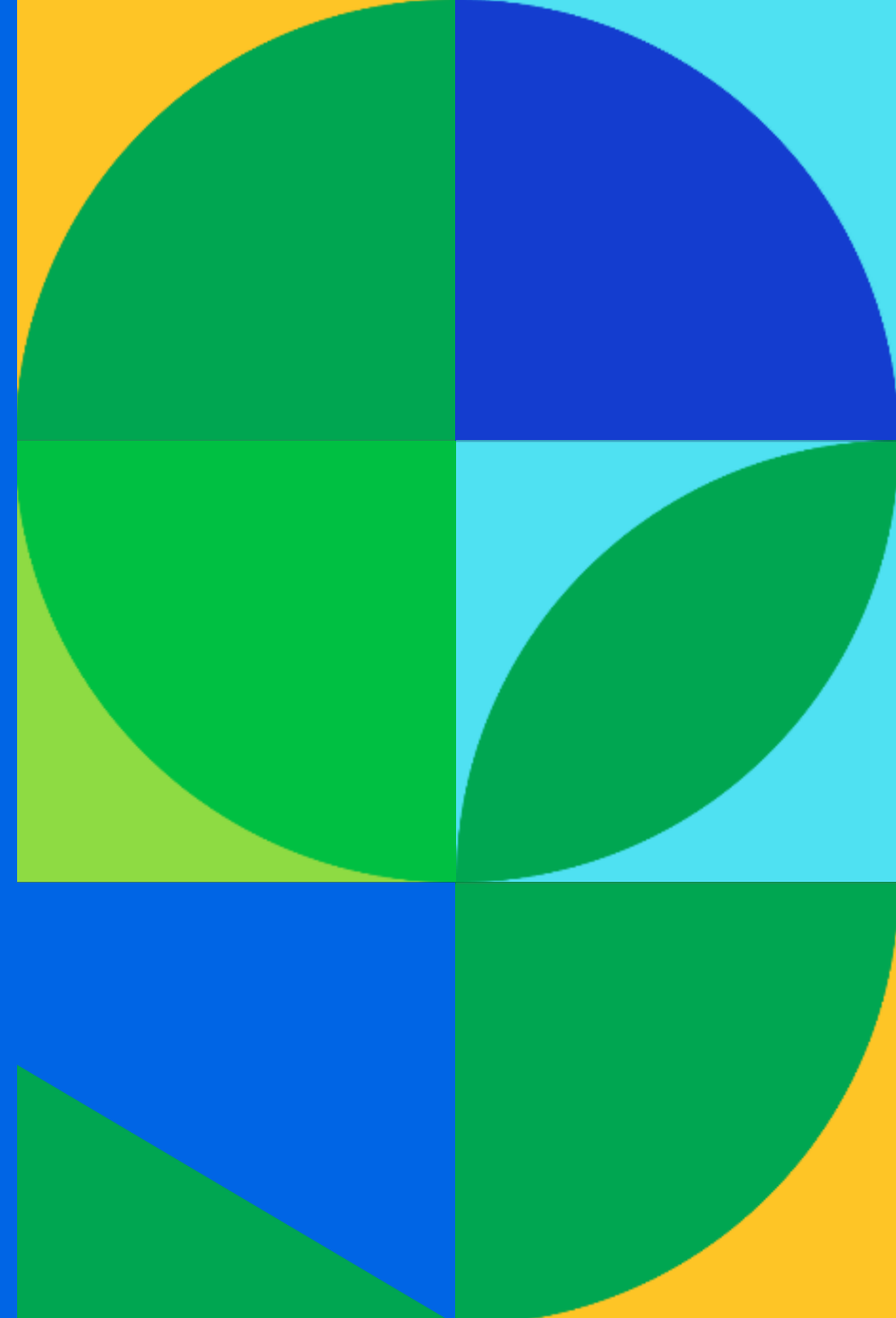
The guidance is based on the GHG Protocol Guidance for Corporate Greenhouse Gas Accounting and Reporting. Suppliers can review the full GHG Protocol Guidance at <https://ghgprotocol.org>

- *GHG Protocol Corporate Accounting and Reporting Standard*
- *GHG Protocol Scope 2 Guidance*

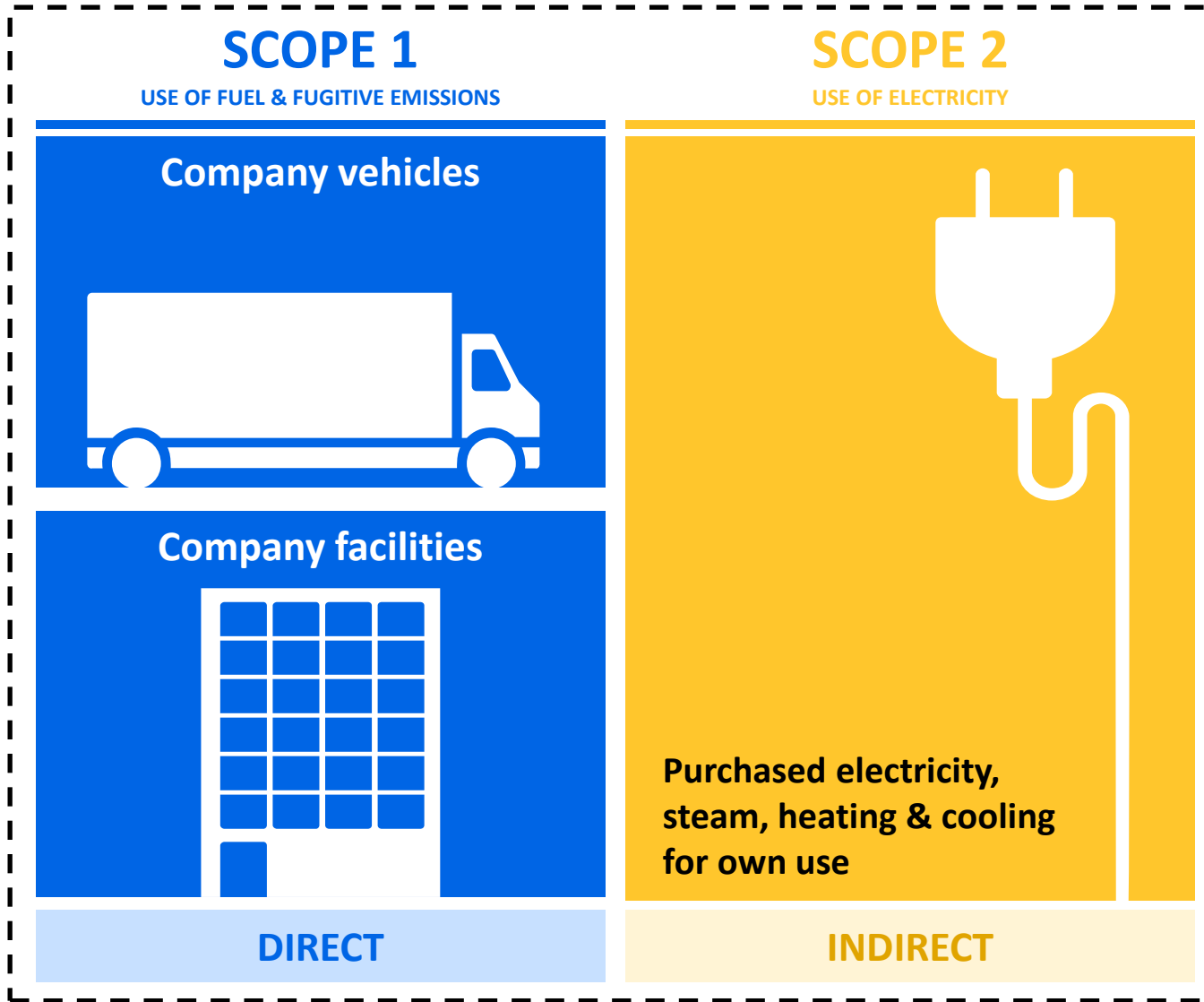
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1. Overview



Scope 1 emissions are direct emissions from company's operations. Scope 2 emissions are indirect emissions from purchased electricity, steam, heating and cooling.



Your Scope 1+2
Emissions are
PepsiCo's Scope 3
Emissions

Data collection is a continuous improvement process



Organizations move along the stages with more experience and guidance



It is a continuous improvement process that usually gets better after 2 years of data management



Starters

Each unit & facility delivers data in the format available



**Routine &
well-prepared**

Harmonized & tested data collection templates for all units & facilities, e.g., Excel-based







Best in class

Sophisticated environmental data collection and processing software

A GHG footprint is completed in 4 phases



 1. Planning & Preparation	 2. Data Collection	 3. Data Calculation & Evaluation	 4. Footprint Monitoring & Revising
<ul style="list-style-type: none"> a) Determine footprint team b) Set organizational boundary c) Understand how to calculate emissions 	<ul style="list-style-type: none"> a) Define data collection method b) Collect activity data c) Collect emission factors 	<ul style="list-style-type: none"> a) Calculate carbon footprint 	<ul style="list-style-type: none"> a) Internal monitoring and reporting b) External footprint validation c) Emissions reduction progress d) Revise approach to improve accuracy & impact
<p><i>Additional Considerations</i></p>	<ul style="list-style-type: none"> d) Evaluate data quality 	<ul style="list-style-type: none"> b) Assess uncertainty & sensitivity 	

2. Planning & Preparation



a) Determine footprint team

The teams required to calculate a GHG footprint can vary depending on the size and complexity of your organization and your company's climate maturity. Teams often include individuals from

- Facilities or Operations & Maintenance (e.g., electricity & fuel usage)
- Procurement or Finance (e.g., refrigerant purchases)
- Engineering
- Corporate Social Responsibility
- Environmental, Health, and Safety
- Leadership
- Third party or external experts

Example: An internal cross-functional GHG inventory team was formed inside Company 'X', which consists of core members from Finance, Facilities, & Engineering team plus a leadership sponsor from the Corporate Social Responsibility team and support from a 3rd party consultant.



b) Set your organizational boundary

There are three approaches to determining which facilities and emissions fall within your Scope 1&2 footprint (i.e., for setting your “organizational boundary”)

Operational Control



If an organization controls the operations of an asset.
This is the most common and recommended approach.

Financial Control



Control is based on financial (versus legal/operational control).
Only used in specific industries like oil & gas.

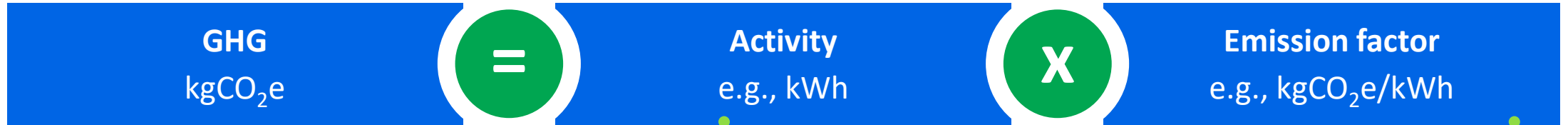
Equity Share



Control is divided by percent ownership of an asset.
Used for shared facilities or operations.

Refer to [GHG Protocol Corporate Standard](#), Chapter 3. Setting Organizational Boundaries for additional detail.

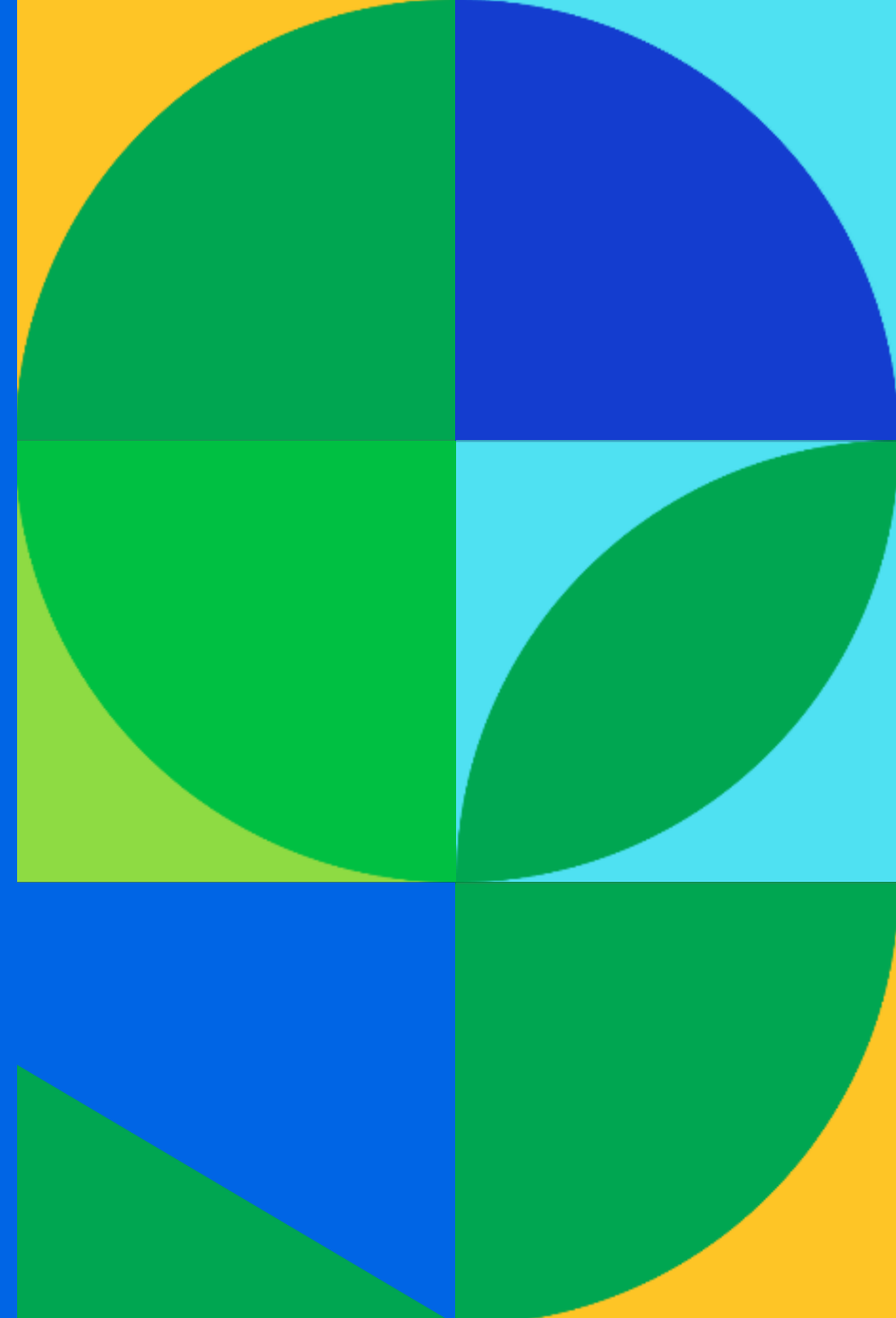
c) Understand calculation methodology



ACTIVITY DATA		
Type	Description	Example
Primary	Data from an emission-generating activity that feeds directly into the GHG calculation formula	The kWh a facility uses based on the monthly utility bills
Secondary	Data from proxy sources or national averages that often requires additional manipulation	Estimating the kWh a facility uses based off the occupied square footage and building type

EMISSION FACTOR		
Type	Description	Example
Primary/ Specific	Factors that are specific to a unique activity and consider characteristics such as location, technology, or other unique inputs	The emission factor from the local utility that supplies electricity to the factory
Secondary/ Generic	Data from proxy sources or national averages that often requires additional manipulation	The emission factor for electricity from the region that the factory is located from EPA egrid database

3. Data Collection



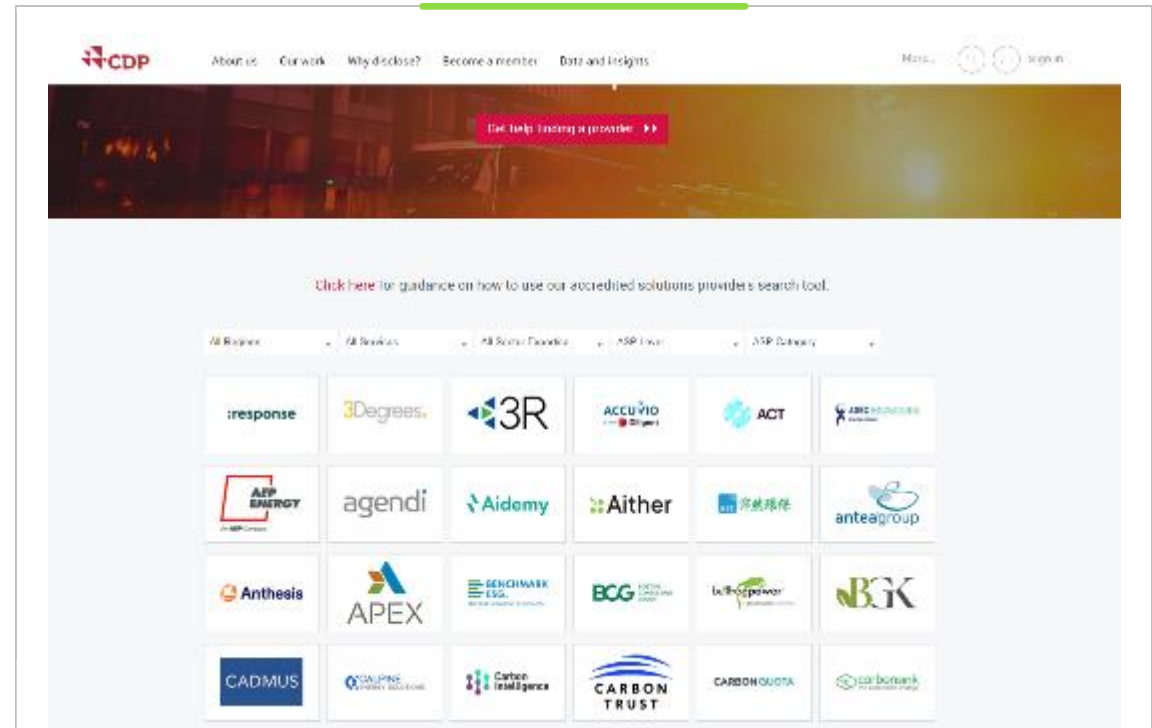
a) Define data collection method

If you are just starting and want to do Scope 1+2 accounting in-house, use the free [GHG Protocol Emissions Calculation Tool](#), along with Microsoft's trainings on how to use this tool ([Scope 1 training](#) and [Scope 2 training](#))

Additional tools are provided in our PepsiCo [Sustainability Action Center](#)

If you want to use a consultant or software provider, check the CDP [Accredited Solutions Providers](#): Filter for providers of GHG Emissions Inventory

Also check the list of software provider if you are more advanced and want to automate the process



b) Collect Scope 1 activity data

Review the below checklist of emissions sources, create a list of those that apply to your company, and collect relevant data

Emission type	Source checklist	Where to find the data
Stationary combustion	<ul style="list-style-type: none"> ✓ Combustion of fuels in boilers ✓ Combustion of fuels in furnaces ✓ Combustion of fuels in burners ✓ Combustion of fuels in turbines ✓ On-site energy production 	<ul style="list-style-type: none"> ✓ Utility bills for natural gas, propane and fuel oil ✓ Invoices for fuel purchases ✓ Data on duration of operation of equipment <i>Note: This will need to be multiplied by the fuel consumption rate to estimate total fuel consumption</i>
Mobile combustion	<ul style="list-style-type: none"> ✓ Combustion of fuel in vehicles operated by your company used for transport of materials, products, waste, and employees 	<ul style="list-style-type: none"> ✓ Invoices for fuel purchases for your fleet ✓ Data on vehicle mileage multiplied by reported fuel economy rate to estimate total fuel consumption ✓ Tonne-km by vehicle type
Fugitive emissions	<ul style="list-style-type: none"> ✓ HFC releases during the use of refrigeration and air conditioning equipment* 	<ul style="list-style-type: none"> ✓ HVAC or refrigeration maintenance records showing quantity of refrigerants used and purchased

* Most refrigerant gases contribute to global warming when leaked into the atmosphere. They have 100-year global warming potentials (GWP) 140 to 11,700 times that of CO₂. The quantity of leaked gas is assumed to equal the amount of gas replaced in the refrigerant system (HVAC, chillers, cold storage, refrigerated transport, heat pump, etc.)

c) Collect Scope 1 emissions factors

- There is no “one-stop-shop” for emissions factors. Different organizations and agencies compile data to develop factors in different ways, resulting in different factors. Furthermore, emissions factors are revised and/or refined as the science evolves and methods are improved.
- Below are the most commonly used database for Scope 1 emissions accounting.



United States Environmental Protection Agency (US EPA) GHG Emission Factors Hub

Access [here](#)

(Click On the PDF or Excel Workbook titled: GHG Emissions Factors Hub)

Use this if your factory is located in the US



UK Department for Environment Food & Rural Affairs (DEFRA)



Access [here](#)

Use this if your factory is located in the UK. These emissions factors can also be used as a proxy for other countries.



We understand that these data bases are a little confusing to navigate – please check out the [emissions factor tutorial video for additional guidance.](#)

Scope 2 emissions: Location-based vs. Market-based

	 Location Based Approach	 Market Based Approach
Definition	<ul style="list-style-type: none">A location-based method reflects the average emissions intensity of grids on which energy consumption occurs.	<ul style="list-style-type: none">A market-based method reflects emissions from electricity that companies have purposefully chosen (or their lack of choice).
Calculation method	<ul style="list-style-type: none">Grid average emission factors are usedAll electricity (renewable and grey) has the same EF (grid-mix).<ul style="list-style-type: none"><i>E.g., if your factory is based in India, the EF used is the average grid EF for all of India, regardless of whether you are buying RE</i>	<ul style="list-style-type: none">Supplier/Product specific emission factors are used.Renewable electricity products have an EF of 0.<ul style="list-style-type: none"><i>With market-based accounting you can account for renewable energy purchases and green electricity contracts.</i><i>If you do not use either, you must use a residual mix emission factor. This is defined as “a type of emission factor representing the average emissions from all unclaimed energy,” and are typically higher than the same region’s location-based EF.</i>
		<p>As you convert PEP portion of electrical load to 100% RE (with credible Energy Attribute Certificates (EACs) to prove it*), the associated market-based Scope 2 emissions become zero.</p>

*See [GHG Protocol Scope 2 Guidance](#) and [CDP Technical Note: Accounting of Scope 2 Emissions](#) for further guidance on market-based Scope 2 accounting.

You need EACs to Make Credible Renewable Electricity Claims

- An **EAC** (may be known as a Renewable Energy Credit (REC) in North America or a Guarantee of Origin (GO) in Europe) represents the **environmental attributes** associated with the generation of electricity from a renewable energy source
- 1MWh = 1 EAC
- For electricity to be considered from a renewable source — to enable compliant reporting claims — **the electricity consumed must be matched with an equivalent volume of EACs** from a renewable energy project

b) Collect Scope 2 activity data

Review the below checklist of emissions sources, create a list of those that apply to your company, and collect relevant data

Emission type	Source checklist	Where to find the data
Purchased Electricity	<ul style="list-style-type: none"> ✓ Annual total kWh of electricity used to operate your facilities 	<p>Check with the following departments to track down utility bills or invoices</p> <ul style="list-style-type: none"> ✓ Accounting
Purchased Heat, Steam, or Cooling	<p>Annual usage associated with</p> <ul style="list-style-type: none"> ✓ Heaters, radiators, water heaters ✓ Air conditioners ✓ Chilled water <p>Calculation methods may entail use of</p> <ul style="list-style-type: none"> ✓ Area (e.g., sq ft) of leased space ✓ Average intensity factors 	<ul style="list-style-type: none"> ✓ Real estate ✓ Operations ✓ Procurement <p>For leased properties, check with the lessor</p>

c) Collect Scope 2 emissions factors

- There is no “one-stop-shop” for emissions factors. Different organizations and agencies compile data to develop factors in different ways, resulting in different factors. Furthermore, emissions factors are revised and/or refined as the science evolves and methods are improved.
- Below are the most commonly used database for Scope 2 emissions accounting.



International Energy Agency (IEA)

Access [here](#)

Use this for all facilities outside the United States or UK. This is the most comprehensive database with national emissions factors for electricity and heat generation. (Note that there is a fee associated with accessing these emissions factors).



Environmental Protection Agency (EPA) — Emissions & Generation Resource Integrated Database (eGRID)

Access [here](#)

(Click on the PDF or Excel Workbook titled: GHG Emissions Factors Hub)
Table 6 is for purchased electricity
Table 7 is for purchased steam and heat

Use this if your company is located in the United States.



UK Department for Environment Food & Rural Affairs (DEFRA)

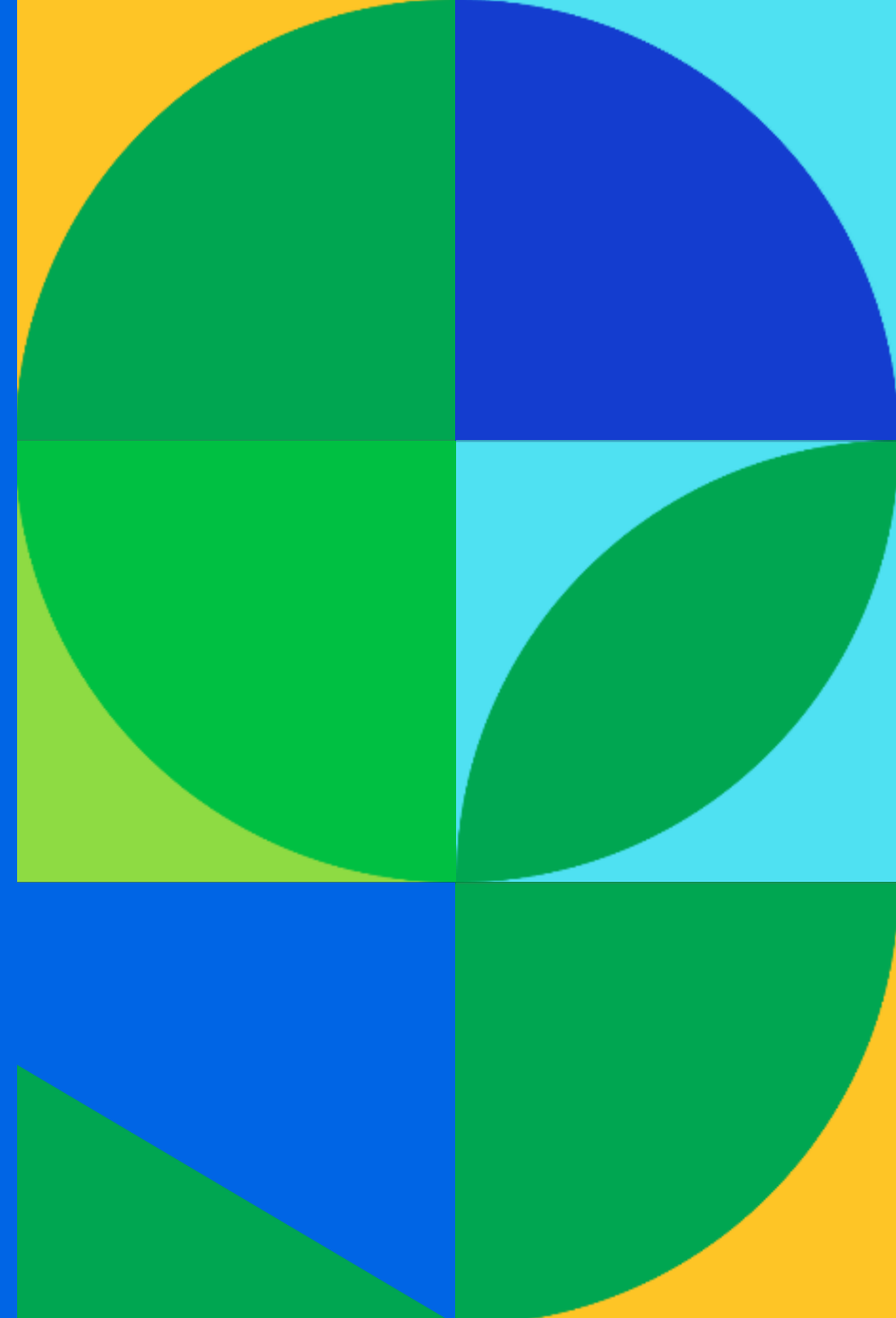
Access [here](#)

Use this if your company is located in the UK.



[We understand that these data bases are a little confusing to navigate – please check out the emissions factor tutorial video for additional guidance.](#)

4. Data Calculation



Calculating GHG emissions



- Make sure the units match (e.g., kWh multiplied with kgCO₂e/kWh; not kgCO₂e/MJ)
- Make sure Emission factor is in kg CO₂e (including all relevant GHG emissions including CO₂, CH₄, N₂O, and other GHGs as defined by the GHG Protocol)

5. Footprint Monitoring & Revising



Footprint monitoring & revising

- Create a monitoring protocol to document your methodology and any changes
- Obtain third-party verification of your enterprise Scope 1+2 emissions
- Set a Science Based Target for Scope 1+2 emissions
- Track emissions to measure emission reduction progress
- Revise approach to improve accuracy over time

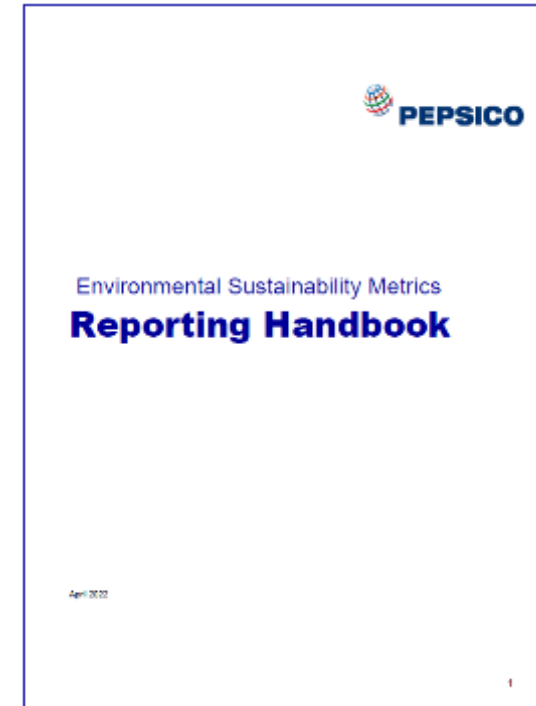


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6. Additional Resources



Our Asks of You in Summary



By End of 2023

Provide our portion of your Scope 1&2 emissions (prorated for volume purchased)

- Visit **Sustainability Action Center** and get resources to calculate your Scope 1 & 2 emissions
<https://sustainabilityaction.pepsico.com/>

By End of 2023

Commit to setting a Science-Based Target

- If eligible, participate in **Guidehouse's Supplier Leadership on Climate Transition** program. Reach out to your PepsiCo contact to get invited

By End of 2023

Commit to setting a Renewable Electricity Targets

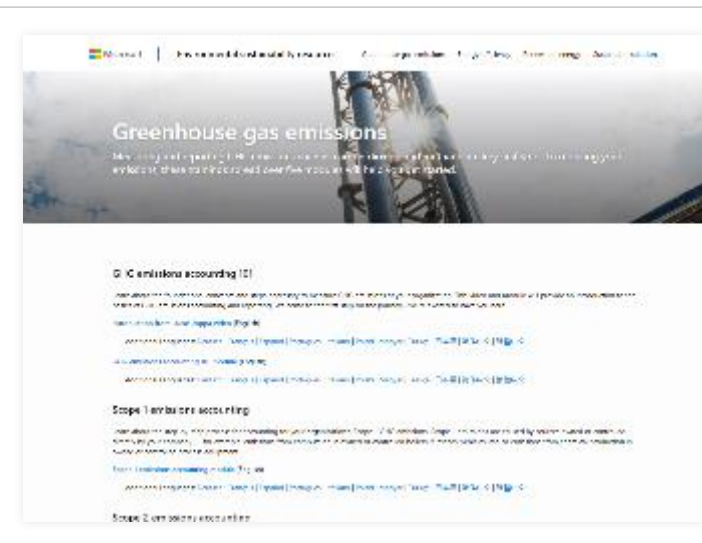
- Develop glidepath to achieve 100% renewable electricity for PEP volumes. Join **PEP REnew program** and sign up via link: [pep+ REnew](#)

Additional resources for calculating Scope 1+2 emissions

CDP Accredited Solutions Providers: Filter for providers of GHG Emissions Inventory



Microsoft training to suppliers on GHG emissions accounting (in partnership with Engie Impact and CDP)



Thank You