

Report Emissions

CDP Supply Chain



Introduction to emission accounting

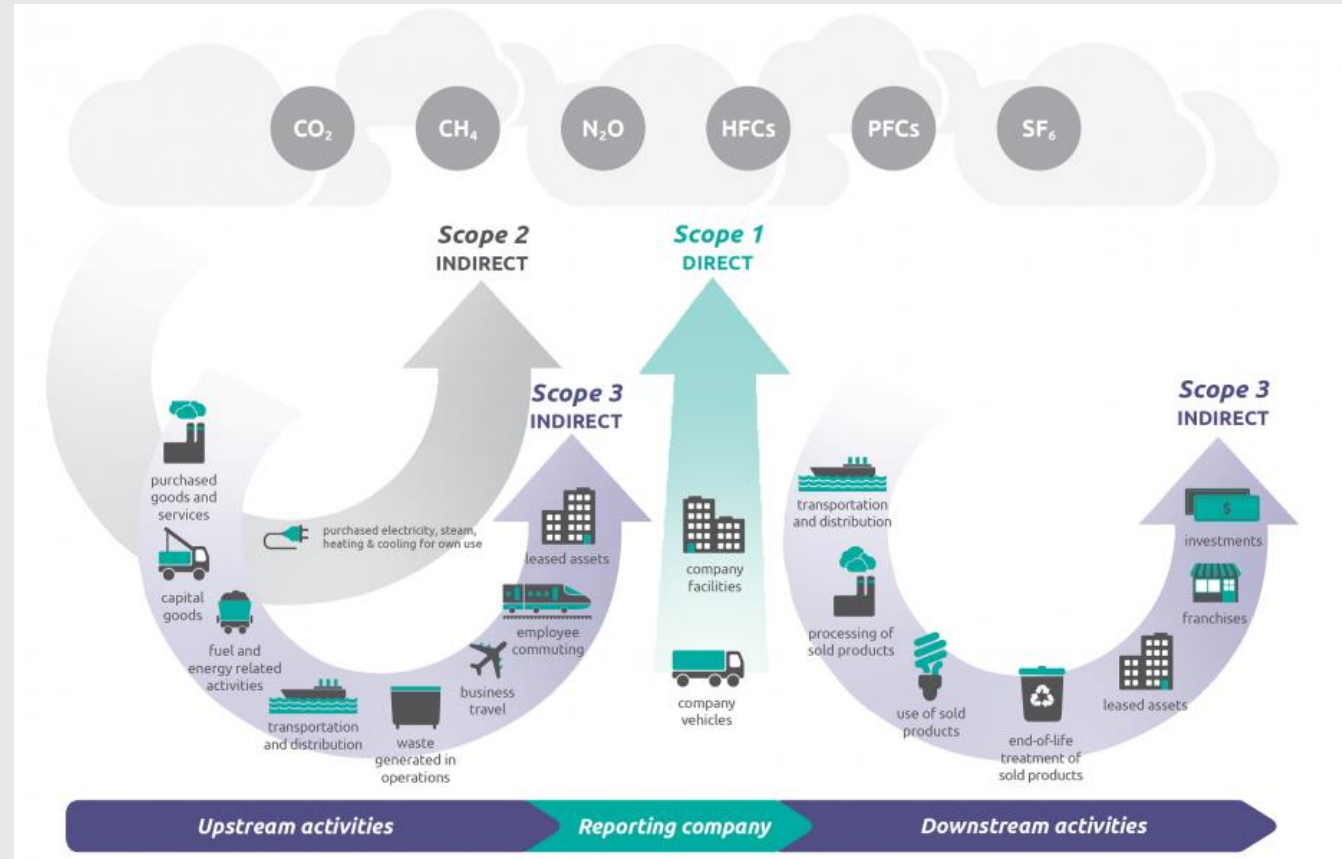
Operational emissions

Scope 1 – Direct GHG emissions from owned or controlled sources

Scope 2 – Indirect GHG emissions from the generation of purchased energy

Value chain emissions

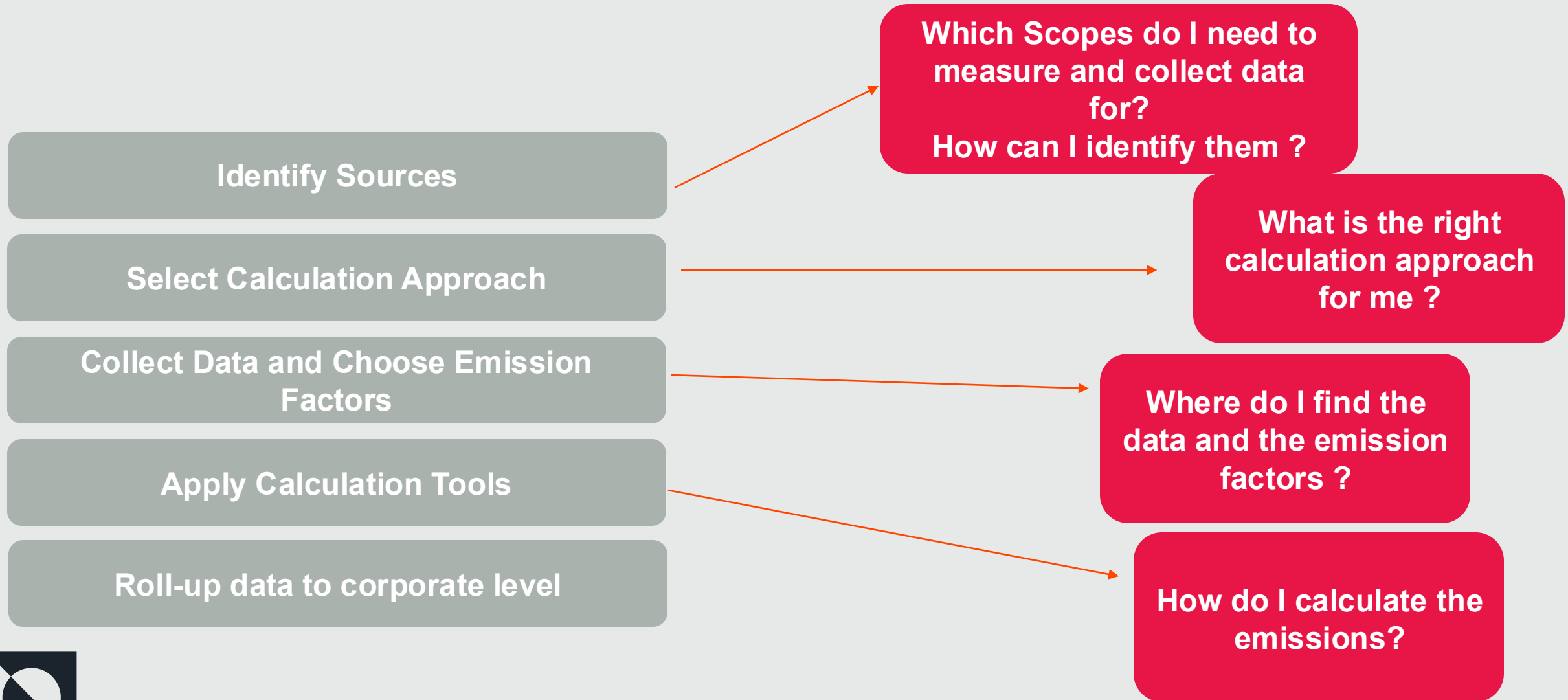
Scope 3 – All indirect GHG emissions (not included in scope 2) that **occur in the value chain** of the reporting company, including both upstream (supply chain) and downstream (use of products) emissions.



- Suppliers' Scope 1 & 2 contribute to your client's Scope 3.
- Value chain emissions (Scope 3) often represent a company's biggest GHG impact.



Steps to identify and calculate emissions



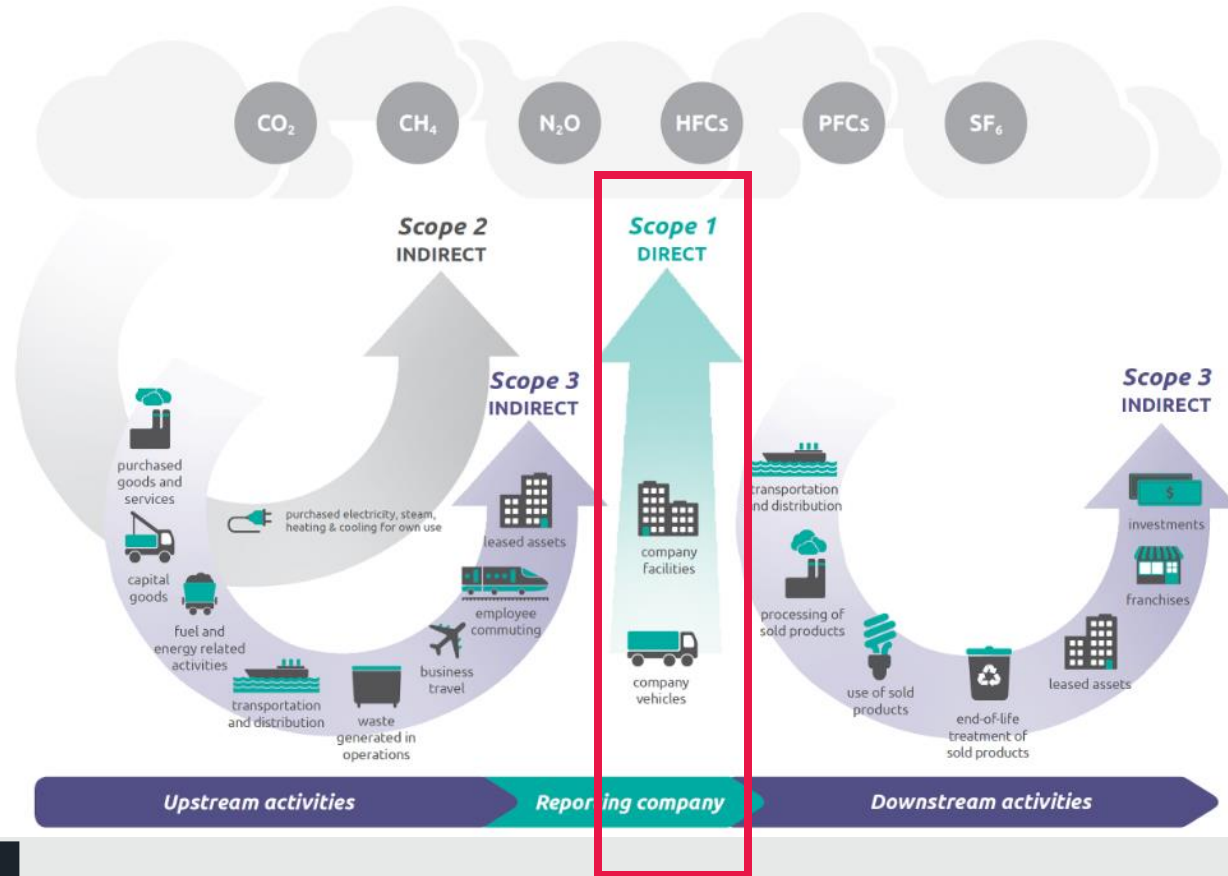
Scope 1 emissions: identify sources

Full
7.6

SME
20.4

Direct emissions from sources owned or controlled by a reporting company

Overview of GHG Protocol scopes and emissions across the value chain



Stationary Combustion

Fuels and heating sources (e.g gas fired combined heat and power (CHP) plants, boilers, heaters)

Mobile Combustion

Combustion coming from all vehicles owned or controlled by a firm, burning fuel (e.g cars, vans, trucks, ships)

Fugitive emissions

Leaks from GHG gases (e.g refrigeration, air conditioning units). E.g Refrigerants in HVAC systems

Process Emissions

Emissions that are released during industrial processes and onsite manufacturing e.g cement calcination, aluminum smelting



A calculation approach for Scope 1

Estimation based on activity data and emissions factors

Activity Data

x

Emissions Factor

=

Emissions (tCO₂e)

What is activity data?

Data from an activity resulting in emissions e.g. gasoline used (gallons)

Common Scope 1 Sources of Activity Data

Gas Meters & Gas Bills

Fuel expense Claims and Bills

Fuel Deliveries

EPR Data

F-Gas Registers

What is an emissions factor?

It is the average emission rate of a given source. It describes the rate at which a given activity releases greenhouse gases (GHGs) into the atmosphere.

- Emission factors convert activity data to emission values
- Presented in specific units, e.g.
 - Kilograms of CO₂ per air kilometer traveled
 - Kilograms of CO₂ per liter of petrol/gasoline

The final emissions figure is reported in metric tonnes of Carbon Dioxide Equivalent

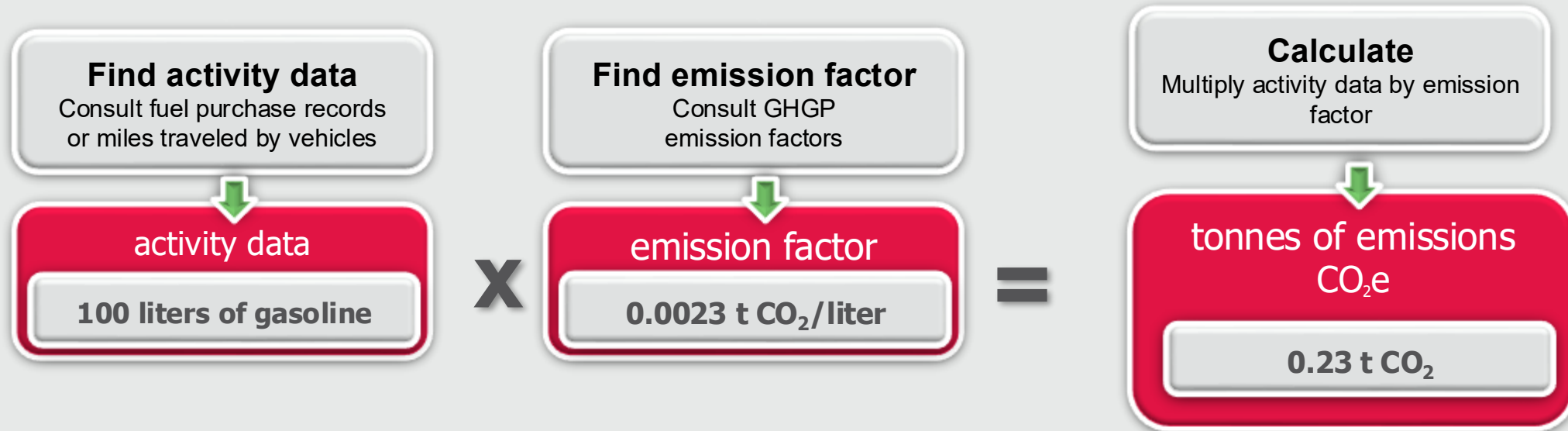
Where can you find emissions factors?

Published by various entities, including government agencies and intergovernmental organizations



Example: Transportation emissions

How would you calculate the CO₂ emissions from travel in company-owned vehicles?

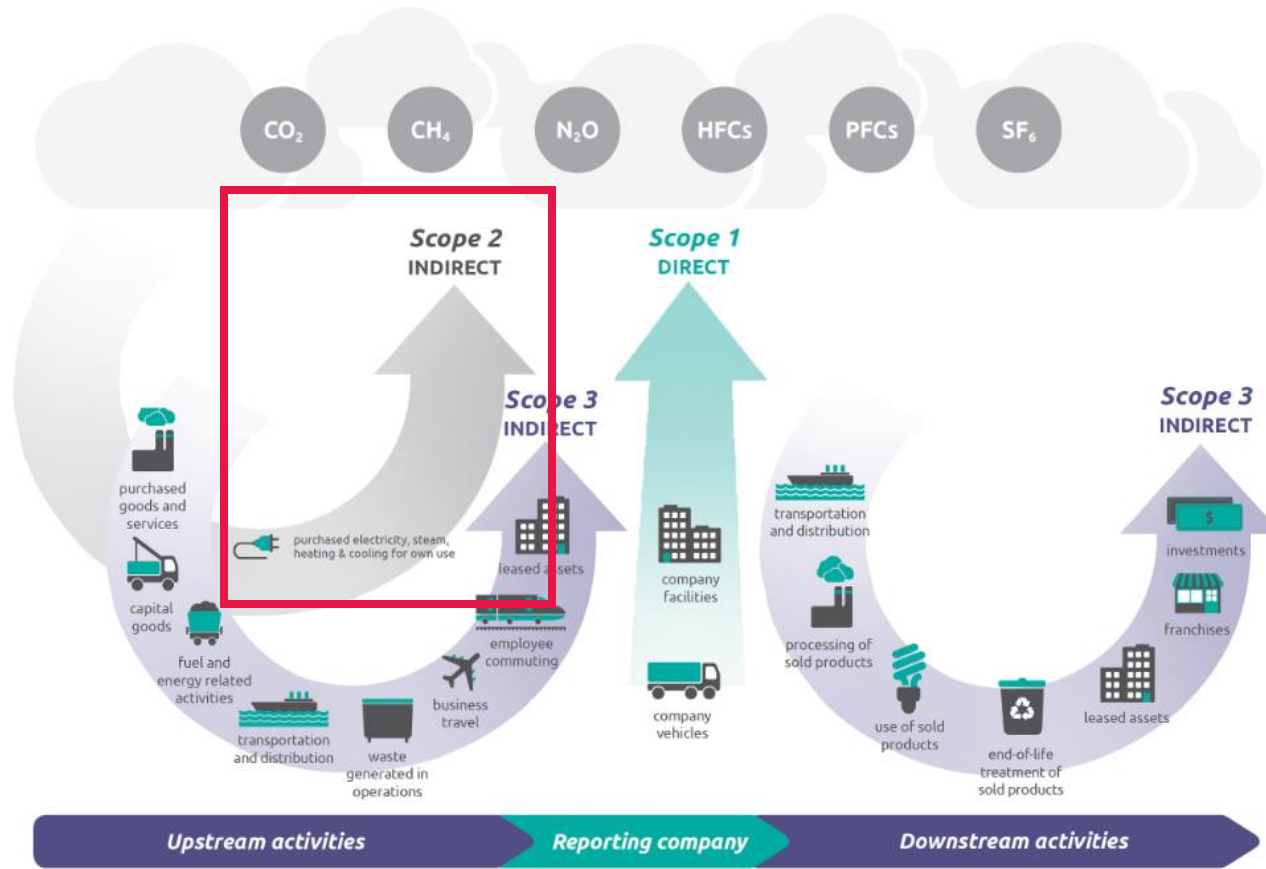


Scope 2 emissions: Identify sources

Scope 2 emissions are indirect emissions that a company produces from the energy it buys and uses

Full 7.7	SME 20.5
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Overview of GHG Protocol scopes and emissions across the value chain



Purchased Electricity for own use

Measured in Kilowatt-hours, Megawatt-hours etc. Electricity used in company offices, production facilities etc

Purchased steam, heating and cooling



Scope 2 emissions: Two methods of calculation

Scope 2 emissions are indirect emissions that a company produces from the energy it buys and uses

Method	Explanation	Emission Factor
Location-based	Uses average emission factors for the electricity grids that provide electricity to a reporting organization	Grid average represents what is being generated on the grid
Market-based	Considers contractual arrangements under which the reporting organization procures power from specific suppliers or sources, such as renewable energy	Derived from contractual information



Scope 2 emissions: Calculation

$$\text{Activity data [MWh]} \times \text{Emission factor [tCO}_2\text{e/MWh]} = \text{Emissions [tCO}_2\text{e]}$$



What is the activity data?

Amount of electricity purchased and consumed in megawatt-hours (MWh)

Where to find activity data?

-Metered electricity consumption or utility bills specifying consumption

What is the emissions factor?

Average value, for a given period of time, of emissions per MWh, for either a specific grid, supplier or energy generation source.



Summary of calculation approach



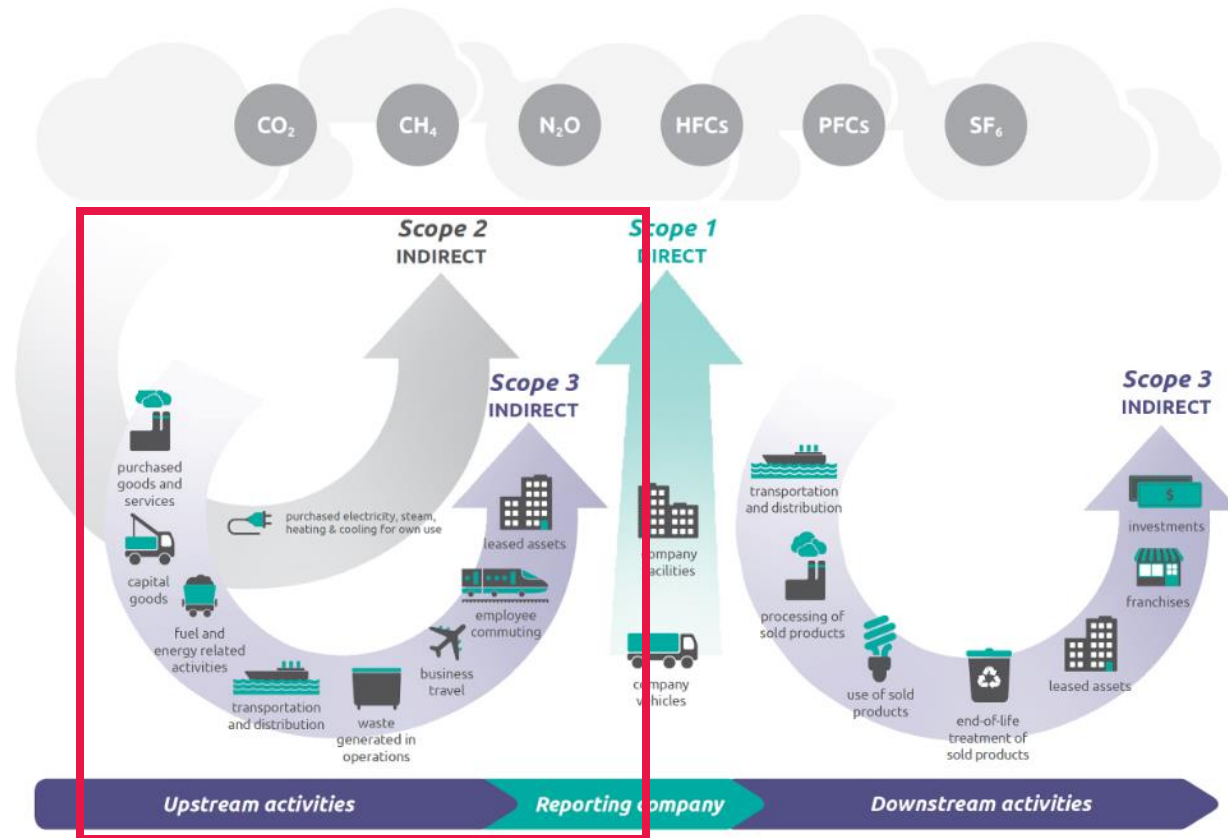
Scope 3 emissions: Upstream emissions

Indirect emissions from your supply chain

Full
7.8

SME
20.7

Overview of GHG Protocol scopes and emissions across the value chain



Cat 1: Purchased Goods and services

Cat 2: Capital Goods

Cat 3: Fuel and energy related activities

Cat 4: Transportation and distribution

Cat 5: Waste generated in operations

Cat 6: Business Travel

Cat 7: Employee commuting

Cat 8: Leased Assets



Example sources of emissions factors

- [GHG Protocol Calculation Tools and Guidance](#)
- [IPCC- Emissions factor database](#)
- [IEA Emissions Factors](#)
- Government agencies – country specific
e.g. Defra in the UK, eGRID and US EPA in the US
- Sector specific sources:
 - WBCSD Sustainable Cement Initiative
 - International Petroleum Industry
 - International Aluminum Institute

Calculation Tools and Guidance

GHG Protocol tools enable companies and cities to develop comprehensive and reliable inventories of their GHG emissions, and help countries and cities track progress toward their climate goals. Calculating emissions is a multi-step process. An accurate and useful inventory can only be developed after careful attention to quality control issues and to the activity data required. Only then should emissions be estimated. Companies should consult GHG Protocol's Corporate Accounting and Reporting Standard for guidance on the entire inventory development process. Below is a complete listing of all tools developed by GHG Protocol. Our tools enable companies to develop comprehensive and reliable inventories of their GHG emissions. Each tool reflects best-practice methods that have been extensively tested by industry experts. Many tools are accompanied by a PDF guidance document, which provides step-by-step guidance on the use of a tool and should be consulted first. Most companies will need to apply more than one tool to cover their emissions. There are different resources for navigating GHG Protocol tools: Cross-sector tools: Applicable to many industries and businesses regardless of sector. Country-specific tools: Customized for particular developing countries. Sector-specific tools: Principally designed for the specific sector or industry listed, though they may be applicable to other situations. Tools for countries and cities: These tools help countries and cities track progress toward their climate goals.

Cross-Sector Tools

Cross-sector Emission Factors

GHG Emissions from Stationary Combustion (English)

GHG Emissions from Stationary Combustion (Chinese)

GHG Emissions from Transport or Mobile Sources

Refrigeration and Air-Conditioning Equipment

Global Warming Potential Values

[See all 9 articles](#)

Country-Specific Tools

Chinese Coal Fired Power Plants Tool

GHG Protocol Tool for Energy Consumption in China (Chinese)

CO2 Emissions from the Production of Cement (CSI) - Chinese version

CO2 Emissions from the Production of Cement (US EPA) - customized tool for India

Pulp and Paper Tool - customized for Mexico (English version)

Pulp and Paper Tool - customized for Mexico (Spanish version)

[See all 7 articles](#)



Resources for capacity building



Scope 1 and 2

- [GHG Protocol Corporate Standard](#)
- [GHG Protocol Scope 2 Guidance](#)
- [CDP Technical Note Scope 2](#)
- [Scope 1 and 2 GHG inventory guidance](#)
- [EPA Energy Grid & Scope 2 Resource](#)

Calculation Tools

- [EPA GHG Emissions Calculator](#)
- [SME Climate Hub Business Carbon Calculator](#)
- [GHG Protocol Calculation Tools and Guidance](#)

Scope 3

- [CDP Technical Note- Relevance of Scope 3 Categories by sector](#)
- [Corporate Value Chain \(Scope 3\) Standard](#)