



# GHG accounting standards ISO 14064-1 and the GHG Protocol

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# Introduction and contacts



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# Content of presentation



**Introduction to GHG Accounting**



**ISO 14064-1**



**The GHG Protocol**



**GHG Accounting Approach**



**Questions**

# Introduction to Greenhouse Gas Accounting

# What is GHG Accounting?

A framework  
of methods  
to quantify  
GHG  
emissions



A way to  
identify GHG  
emissions  
hotspots



The basis of  
GHG targets,  
monitoring  
and reporting



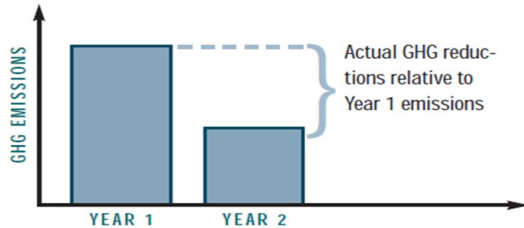
The first  
step toward  
climate  
action



# Three types of GHG accounting

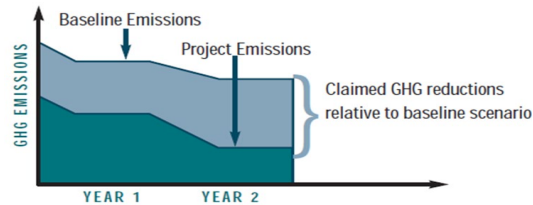
## 1. Entities

- Combines emissions data across an **organisation's operations**
- **Emissions** have mostly **already occurred**
- Emissions data **compared** with **prior base year**



## 2. Projects

- Quantifies **emissions avoided by a project** in the future
- Impact **estimated through baseline comparison** ("what if?" scenario)



## 3. Products

- **Life Cycle Assessment (LCA)**
- Combines data from **past and future emissions across all phases** of an individual **product or service**
- Emissions data **compared** with **prior base year**



# Applicable programs and standards

## GHG Protocol

GHG Protocol establishes comprehensive global standardised frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains and mitigation actions.



## ISO 14064-1

ISO 14064 is an international standard for quantifying and reporting greenhouse gas emissions. ISO 14064 is an important reference for conducting a GHG inventory for an organisation. ISO 14064 Part 1 establishes a process for quantifying GHG emissions for the inventory.



## SBTi

Science Based Targets provide a clearly defined pathway for companies to reduce GHG emissions. Targets are considered 'science-based' if they are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement.



## Net Zero

Net zero CO2 emissions are achieved when anthropogenic CO2 emissions are balanced globally by anthropogenic CO2 removals over a specified period. This is achieved by offsetting a company's emissions.

**NET ZERO**

Sector-specific guidelines are available to address GHG sources that are unique to certain sectors

# ISO 14064-1



## The ISO 14060 family

Provides clarity and consistency for quantifying, monitoring, reporting and validating or verifying GHG emissions and removals

Support sustainable development through a low-carbon economy and to benefit organizations, project proponents and interested parties worldwide.

# The ISO 14060 family

## ISO/TR 14069

Guidance for the application of ISO 14064-1

Will be replaced by ISO/TC 14064-3

## ISO 14064-1

Design and develop GHG inventories for organizations

GHG inventory and report

GHG statement

## ISO 14064-2

Quantify, monitor and report emission reduction and removal enhancement

GHG project documentation and reports

GHG statement

## ISO 14067

Develop CFP per functional unit or partial CFP per declared unit

CFP study report

GHG statement

Engagement type consistent with the needs of the intended user

## ISO 14064-3

Specification with guidance for the verification and validation of greenhouse gas statements

ISO 14065 Requirements for validation and verification bodies

ISO 14066 Competence requirements for GHG validation teams and verification teams

Requirements of the applicable GHG programme or intended users



# ISO 14060 Standards on GHG Accounting

*for corporates*

The ISO 14060 family provides clarity and consistency for quantifying, monitoring, reporting and validating or verifying GHG emissions and removals. Here the standards most relevant for corporates are introduced.

## ISO 14064-1

Details principles and requirements for designing, developing, managing and reporting **organization level** GHG inventories.

## ISO 14069

Describes the principles, concepts and methods relating to the quantification and reporting of direct and indirect GHG emissions for an organization. It **provides guidance** for the application of ISO 14064-1.

## ISO 14067

Defines the principles, requirements and guidelines for the quantification of the carbon footprint of **products**.

## ISO 14064-3

Details requirements for **verifying GHG statements** related to GHG inventories, GHG projects, and carbon footprints of products.



# ISO 14064-1 principles

ISO 14064-1:2018 outlines five key principles that need to be adhered to when accounting for and reporting on greenhouse gas emissions, based on the principles of the GHG Protocol.

## Relevance

Select the GHG sources, GHG sinks, GHG reservoirs, data and methodologies appropriate to the needs of the user.

## Completeness

Include all relevant GHG emissions and removals.

## Consistency

Enable meaningful comparisons in GHG-related information.

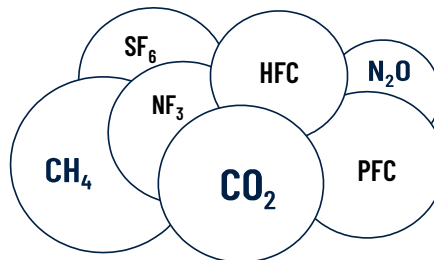
## Transparency

Disclose sufficient and appropriate GHG-related information to allow intended users to make decisions with reasonable confidence.

## Accuracy

Reduce bias and uncertainties as far as is practical.

# ISO 14064-1 Methodology



.. but all as  $\text{CO}_2\text{e}$

**Category 1:  
Direct Emissions  
and removals**

**Category 2:  
Indirect Emissions  
from imported energy**

## Other Indirect Emissions

Category 3: From transportation

Category 4: From products used by organizations

Category 5: From use of products by  
organizations

Category 6: From other indirect emissions



# The GHG Protocol

# GHG Protocol Reporting and Accounting standards

*for corporates*

While based on the same methodology and accounting principles, the GHG Protocol created a variety of standards to cater to different types of organisations and needs. Here all standards relevant for corporates are introduced.

## Corporate Standard

The Corporate Standard provides requirements and guidance for companies and other organisations, such as NGOs, government agencies, and universities, to create a GHG emissions inventory on an **organisational level**.

## Scope 2 Guidance

The Scope 2 Guidance standardised how corporations measure emissions from purchased or acquired electricity, steam, heat and cooling (called “scope 2 emissions”).

## Corporate Value Chain (Scope 3) Standard

The Corporate Value Chain (Scope 3) Standard allows companies to assess their entire **value chain** emissions impact and identify where to focus reduction activities.

## Technical Guidance for Calculating Scope 3 Emissions

Supplement to the Corporate Value Chain (Scope 3) Standard including additional guidance calculation methods for the different Scope 3 emission categories.

## Product Standard

The GHG Protocol Product Life Cycle Standard can be used to account for and understand the full life cycle emissions of a **product**.



# GHG Protocol reporting and accounting principles

The GHG Protocol outlines five key principles that need to be adhered to when accounting for and reporting on greenhouse gas emissions.

## Relevance

Ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users – both internal and external to the company.

## Completeness

Account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusions.

## Consistency

Use consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.

## Transparency

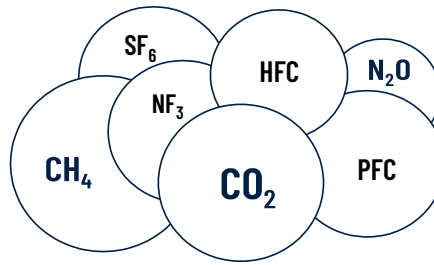
Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.

## Accuracy

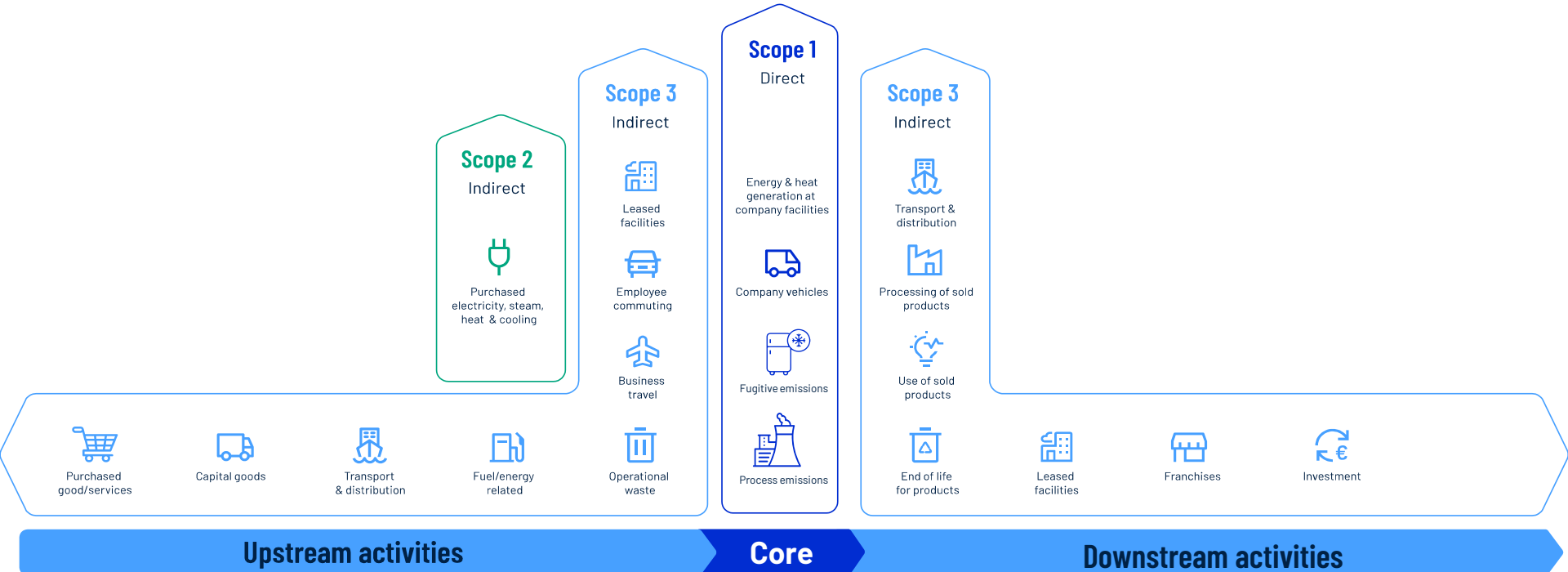
Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.



# GHG Protocol Methodology

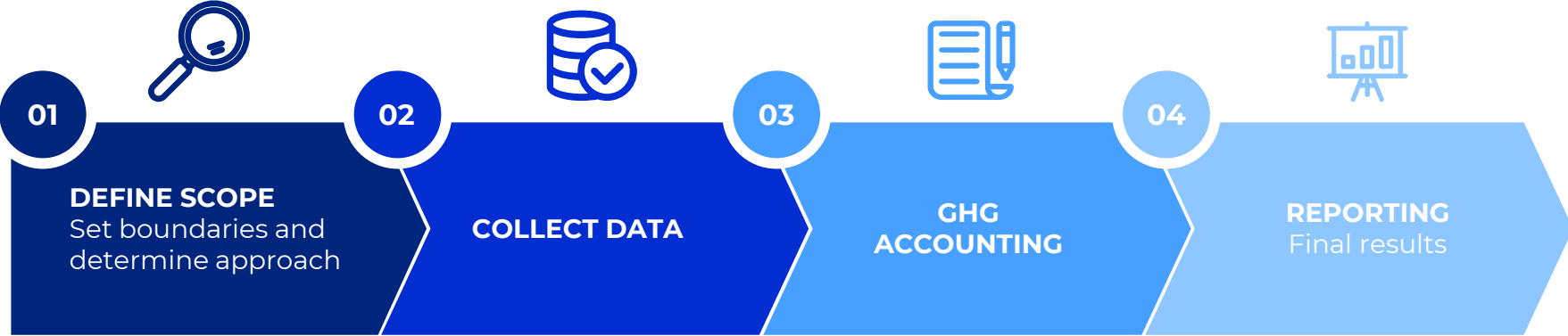


.. but all as  $\text{CO}_2\text{e}$



# GHG Accounting Approach

# The GHG accounting process



**YOUR CARBON FOOTPRINT**

# Organisational boundaries determine which emissions are yours...

Setting organisational boundaries allows you to define **which entities and operations to include in your GHG inventory**.

## Control approach

Under the control approach, a company accounts for 100% of the GHG emissions from operations over which it has control. It does not account for GHG emissions from operations in which it owns an interest but has no control. Control can be defined as financial or operational.

### Financial control

The company has financial control over the operation if the former has the ability to direct the financial and operating policies to gain economic benefits.

### Operational control

A company has operational control over an operation if the former or one of its subsidiaries has the full authority to introduce and implement operating policies.

**Most commonly used**

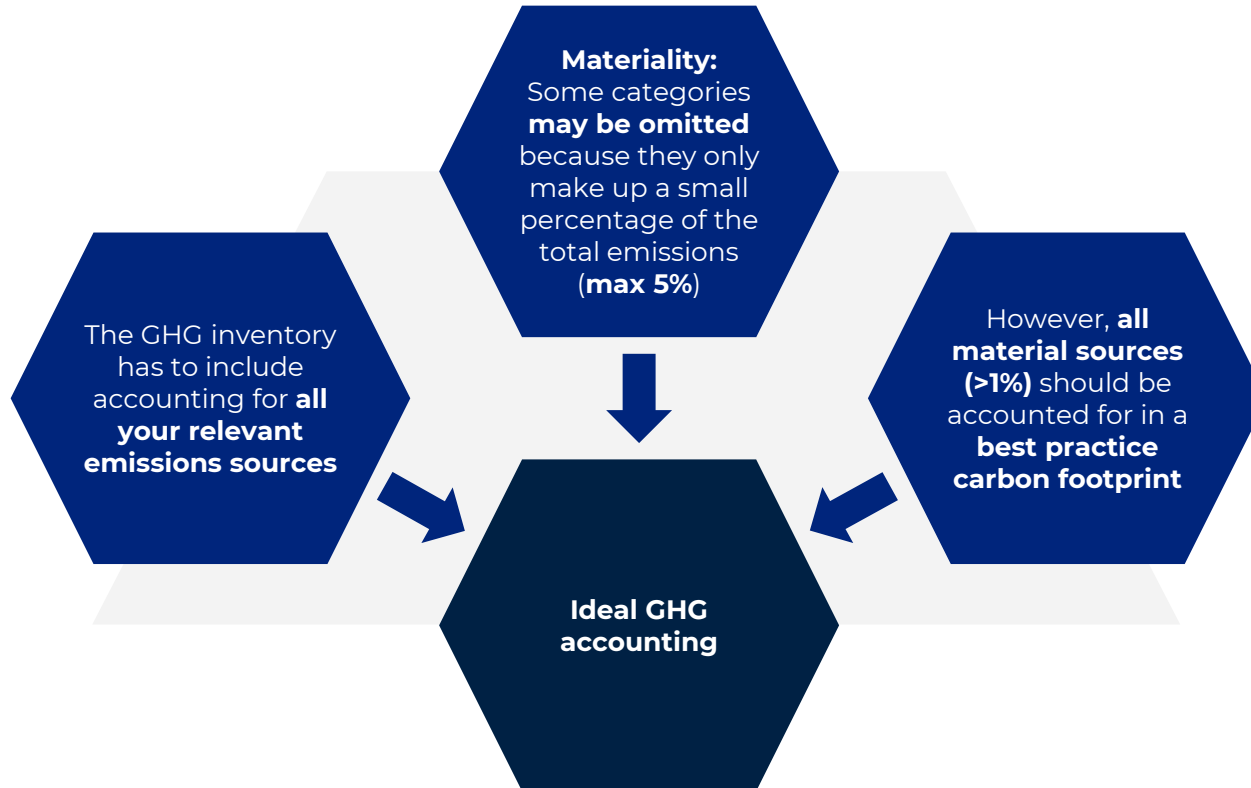
## Equity share approach

Under the equity share approach, a company accounts for GHG emissions from operations according to its share of equity in the operation (regardless of its control over the operations).

This approach is mostly used by companies with a lot of investments.

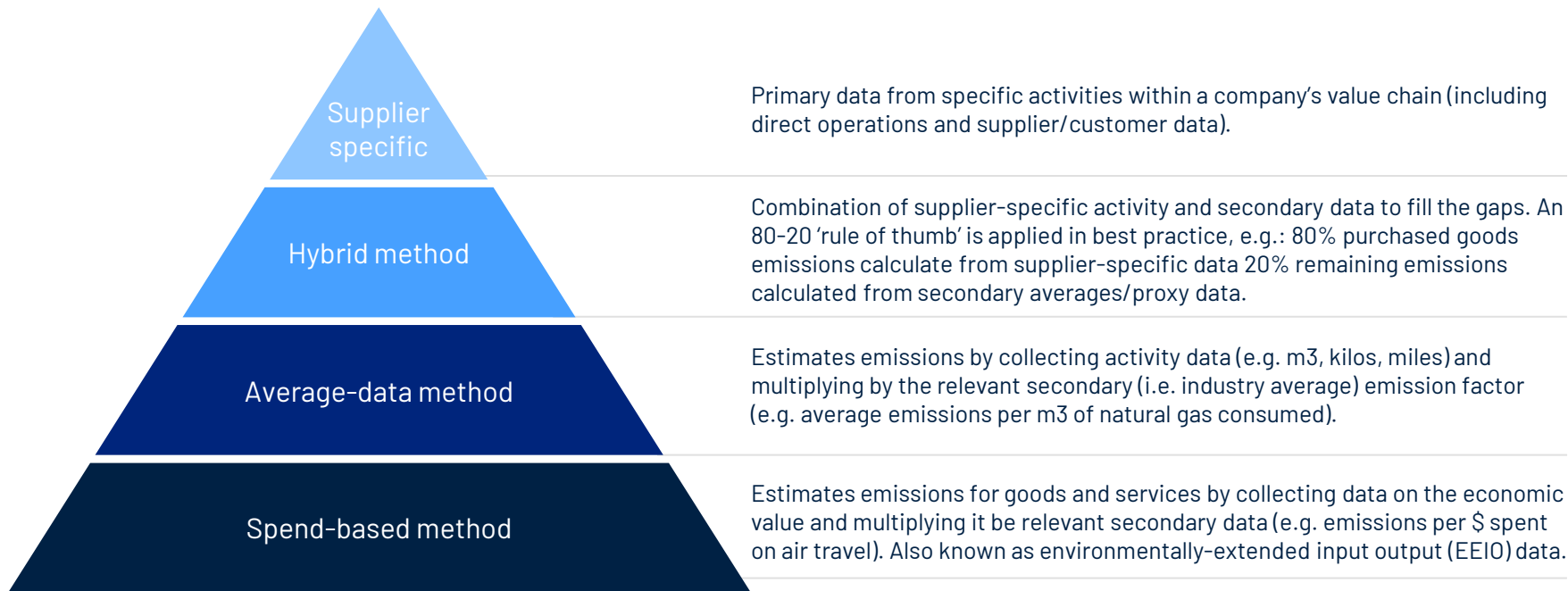
# Completeness of GHG scoping

Depending on the company and type of accounting (corporate, project, product)



# Data granularity determines accuracy of your emissions

The more granular your data, the more your emissions become a management metric rather than a reporting metric.



# Emissions factors and GWP

## Global warming potential (GWP)

- GWP: a measure of how much a GHG contributes to global warming relative to CO<sub>2</sub>
- Use GWPs to convert tonnes of a GHG to tonnes of carbon dioxide equivalent (CO<sub>2</sub>e), to calculate total emissions using a common unit

## Emission factor (EF)

- EF: converts activity data to an emission value
- Published by various entities, including government agencies and intergovernmental organisations
- Usually expressed as CO<sub>2</sub>eq/kg, CO<sub>2</sub>eq/litre, etc

GHG	GWP
CO <sub>2</sub>	1
CH <sub>4</sub>	28
N <sub>2</sub> O	365
HFCs	4–12,400
PFCs	6,630–17,400
SF <sub>6</sub>	23,500

$$\text{Mass CO}_2\text{eq} = (\text{mass of gas}) \times (\text{GWP})$$

# Scope 1 Deep dive

Scope 1 accounts for **direct emissions** that occur at sources owned or financially controlled by the reporting company.



## Stationary combustion

Emissions from the combustion of fuels in *on site* stationary equipment for generation of energy. Stationary sources include boilers, furnaces, burners, turbines, heaters, incinerators, engines, and flares.



## Mobile combustion

Emissions from the combustion of fuels in company owned or controlled vehicles for the transportation of materials, products, waste, and employees. Vehicles include cars, trucks, buses, metros, trains, and airplanes.



## Process emissions

Emissions resulting from manufacture or processing of chemicals and materials, e.g., cement, aluminum, adipic acid, ammonia manufacture, and waste processing.



## Fugitive emissions

Emissions resulting from intentional or unintentional releases of gas transport. This includes releases of hydrofluorocarbon (HFC) emissions during the use of refrigeration and air conditioning equipment in offices.



## Land use emissions

Direct emissions and removals from land use, land use change and forestry (LULUCF), which covers all GHGs, from living biomass to organic matter in soils.



# Scope 2 Deep dive

Scope 2 accounts for indirect GHG emissions from **the generation of purchased energy**.



## Purchased electricity

Emissions from the generation of purchased electricity. Emissions are zero if electricity was generated from renewable sources such as wind or solar.



## Purchased cooling

Emissions from the generation of purchased cooling (if cooling occurs centrally). If cooling comes from air conditioning systems, which use electricity, then emissions are accounted for under 'Purchased electricity'.



## Purchased heat

Emissions from the generation of purchased heat (central heating). If fuel for heating purposes is combusted directly on site (e.g. in boilers), emissions are accounted for under Scope 1 (stationary combustion).



## Purchased steam

Emissions from the generation of purchased steam.

# Scope 2 needs to be reported on two calculation methods



## Location-based

Average power generation emission factors for the defined locations.

A network average emission factor representing the energy produced in a region is derived and allocated to the energy consumers in that region.



## Market-based

Allocation of emissions from power generators to consumers based on 'contractual instruments' (e.g., utility-specific emission factors and EACs).

The method reflects the contractual relationships between energy suppliers and customers.

More information can be found here: [GHG Protocol: Scope 2 Guidance](#)



# Franchises

Scope 3 in the  
GHG Protocol

Category 1 & 2  
in ISO 14064-1



## Franchises

This category includes emissions associated with the operations of franchises, which are independently owned businesses that operate under the organisation's brand.

# Scope 3

## Indirect emissions

### Category 3

#### Transportation



#### Upstream Transportation

Emissions from the transportation and distribution of products purchased in the reporting year, between a company's tier 1 suppliers and its own operations in vehicles not owned or operated by the reporting company.



#### Downstream Transportation

These emissions result from the transportation and distribution of an organisation's products and services to customers and end-users.



#### Business travel

Emissions from the transportation of employees, visitors, for business-related activities in vehicles owned or operated by third parties, such as aircraft, trains, buses, and passenger cars.



#### Employee commuting

Emissions from the transportation of employees between their homes and their worksites.



## Scope 3 Indirect emissions

### Category 4 Products used by organizations



#### Purchased goods & services

All upstream (i.e., cradle-to-gate) emissions from the production of products purchased or acquired by the reporting company in the reporting year. Products include both goods (tangible products) and services (intangible products).



#### Waste

Emissions from third-party disposal and treatment of waste generated in the reporting company's owned or controlled operations in the reporting year. This category includes emissions from disposal of both solid waste and wastewater.



#### Capital goods

All upstream (i.e., cradle-to-gate) emissions from the production of capital goods purchased or acquired by the reporting company in the reporting year. Examples of capital goods include equipment, machinery, buildings, facilities, and vehicles.



#### Upstream and leased assets

Emissions from the operation of assets that are leased by the reporting company.



#### 03 Fuel- and energy related activities

Upstream emissions related to the extraction, production and transportation of fuels consumed or used for energy production. This includes emissions associated with transportation & distribution losses.



# Scope 3

## Indirect emissions

### Category 5

#### Use of products by organizations



#### Processing of sold products

Emissions associated with the processing and use of products sold by the organisation, such as emissions from customer use or maintenance of the product.



#### Use of sold products

Emissions from the use of goods and services sold by the reporting company in the reporting year. A reporting company's scope 3 emissions from use of sold products include the scope 1 and scope 2 emissions of end users (both consumers and business customers).



#### End of life treatment of sold products

Emissions associated with the disposal, recycling, or treatment of products and materials at the end of their life cycle.



#### Downstream leased assets

These emissions result from the operation and maintenance of assets that an organisation leases or rents to others.



#### Investments

Emissions associated with the reporting company's investments in the reporting year, not already included in scope 1 or scope 2.

# Scope 3

## Indirect emissions

### Category 6 Other indirect emissions

The purpose of this category is to capture any organization specific emission (or removal) that cannot be reported in any other category.

In consequence, it is the organization's responsibility to define the content of this particular category.

# Questions?



# Thank you

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