
The Path to Climate Neutrality

Measuring: the Basics

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Measure

Calculating greenhouse
gas emissions



Measure: Terminology

1- GHG inventory/carbon footprint

Greenhouse gas emissions that are attributable to the organization

2- Carbon¹

Generally understood as “carbon equivalent” or CO₂e, includes all GHGs, not only CO₂ or carbon-containing ones

3- Emission sources

Activities that generate GHG emissions.

4- Emission factors

Conversion factors from activities to GHG emissions.



1 Note that this term can have other meanings for other organizations

Measure: Key principles

1- Completeness

All relevant emission sources must be included.

2-Consistency - Comparability

The same approach must be used year after year.

3- Transparency

All information (including assumptions and approximations) must be publicly disclosed.



Measure: GHG Protocol and its Scopes

Scope 1 – All Direct Emissions from the activities of an organisation or under their control.

Burning of fuels, driving owned cars.

Scope 2 – Indirect Emissions from electricity/heating/cooling purchased and used by the organisation.

Purchasing electricity, heat, steam, cooling

Scope 3 – All Other Indirect Emissions

Everything else! Business travel, commuting, waste, water, purchased goods and services of all types

*Scope 3 is usually the biggest and the most complex,
but also very important to work on*



Measure: Why different scopes?

Scopes		Sources
Scope 1	You control, you decide	<ul style="list-style-type: none">• Generating electricity• Generating heat – non-electric• Business travel – owned company vehicles• Industrial processes emissions
Scope 2	Be efficient!	<ul style="list-style-type: none">• Purchasing of electricity• Purchasing heat• Purchasing steam
Scope 3	You can influence	<ul style="list-style-type: none">• Business travel – flights• Business travel – public transport• Waste & Wastewater• Transmission and distribution losses• Food consumption <p>Difficult but important!!</p>



Measure: Scopes 2 and 3

Scope 2

Formally, organizations must report Scope 2 electricity-related emissions based on market-based and location-based method.

For Climate Neutral Now purposes and our calculator, we use location-based method and emissions will be zero if there is a renewable energy contract or guarantee of origin in place.

Scope 3

The GHG Protocol has detailed guidance on how to determine which emission sources to include in Scope 3.

For Climate Neutral Now purposes, we encourage organizations to include all scope 3 sources where it is feasible to make an estimation.



Measure: Emission factors

GHG emissions = activity level x activity emission factor

$$\begin{aligned}\text{GHG emissions} &= 4000 \text{ kWh/year} \times \mathbf{0.596 \text{ kg CO}_2\text{e/kWh}} / 1000 \\ &= 2.38 \text{ tonsCO}_2\text{e/year}\end{aligned}$$

DEFRA Emission Factors

- Conversion factors allowing calculation of GHG emissions from a range of activities
- Developed by UK Government's Department for Environment, Food & Rural Affairs (DEFRA)
- They are the basis for our simplified calculator, except for electricity-related emissions.



Thank you

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