Climate Contribution Hub

Climate Responsibility Approach

Collecting data and measuring emissions

November 2025

Collecting data and measuring emissions

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Activity data
Activity data refers to measurable information about an organisation's operations—such as energy consumption, travel, purchases, or waste generation—that is used to calculate greenhouse gas emissions.

Emission factors
An emission factor is a value that shows how many greenhouse gas emissions are released for each unit of activity data (e.g. tonnes of fuel consumed, tonnes of product produced). Emissions factors are used to calculate emissions inventories.

Implementing the Climate Responsibility approach begins with calculating your greenhouse gas (GHG) emissions to understand your climate impact.

An organisation's emissions can be broken down into different categories, also known as emission scopes. The GHG Protocol divides emissions into three scopes along an organisation's value chain:

* Scope 1 refers to direct emissions from sources owned or controlled by the organisation.
* Scope 2 emissions are indirect emissions from the generation of purchased energy consumed by the organisation.
* Scope 3 emissions occur within an organisation's value chain and so they fall outside of an organisation's direct operations, however they are the direct result of an organisation's business model and purchasing decisions.

Your organisation is responsible for all three emission scopes.

Greenhouse gas emissions from an activity are calculated by multiplying *activity data* by an *emission factor*.

$$GHG\ emissions = Activity\ Data \times Emission\ Factor$$

If your organisation is new to measuring its emissions, it can use the GHG Emissions Calculator (coming soon) to get started. This tool allows to calculate your emissions from key emission categories, including a repository of Germany-wide and global emission factors.

The following guidance explains how smaller organisations can start to calculate greenhouse gas emissions from relevant emission sources.

Prioritising data collection efforts

In the first year of reporting, organisations should:

* Focus their resources on the most significant emission sources in their *emissions inventory*.
* Prioritise data collection efforts for emission activities that are expected to, either:
    * Have the most significant GHG emissions;
    * Offer the most significant GHG reduction opportunities;
    * Be reasonably easy for your organisation to calculate.
* Increase coverage and quality of data and assumptions over time.

Emissions inventory
An emissions inventory is a list that shows how many greenhouse gas emissions an organisation produces to run its activities. These are usually divided in three scopes.

Organisations can choose the different approaches to prioritising data collection efforts:

* Seek higher quality data for all activities that are significant in size, activities that present the most significant risks and opportunities in the value chain, and activities where more accurate data can be easily obtained.
* Choose to rely on relatively less accurate data for activities that are expected to have insignificant emissions or where accurate data is difficult to obtain.

If some emission categories are excluded from your organisation's emissions inventory, this should be transparently communicated and justified.

Q&A: Should my organisation address historical emissions?

Your organisation can choose to calculate historical emissions if it has access to the activity data necessary to do so, and the internal capacity to undertake the process to calculate emissions for several years in the past. Accessing historical data may be complicated, therefore this guide does not request users to do this. Addressing historical

emissions is important for understanding an organisation's overall responsibility, both past and present. In many cases, organisations may only be able to extrapolate emissions data backwards using today's emissions. If this is the case, any attempt to calculate historical emissions and assumptions made in the process should be transparently communicated.

Collecting data

The process of collecting activity data is similar across emission scopes. Organisations need to gather activity data such as amount of purchased equipment, organisational expenses and distance travelled for business purposes.

Organisations should prioritise primary data over secondary data. Primary data is data provided by suppliers or other value chain partners, while secondary data is used when primary data is not available. Using primary data helps organisations track their progress in reducing emissions, because it reflects real changes in their activities over time in their emissions inventory. Secondary data can include industry-average data (from published databases, government statistics, literature studies), financial data or proxy data.

If your organisation does not have access to the data needed to calculate an emission source that is likely significant, it should use estimates or make reasonable assumptions. When making assumptions, organisations should remain conservative in their approach to make sure that emissions are not underestimated.

If the emission source is likely small and estimates and assumptions are hard to find, you can leave out the emission source until you have access to better data. Your organisation should, however, revisit the emission source in the following reporting year and attempt to fix the data gap.

The people in charge with calculating emissions will likely need to talk to the finance, IT and human resources teams and coordinate data collection internally. Over time, these processes should be streamlined, but setting these up will require more capacity in the first year.

For certain key emission sources, collecting data and calculating emissions presents key challenges – these challenges and the associated solutions are highlighted below.

Organisations can consider a 5-10% top-up on their emissions calculation to account for various uncertainties and assumptions made during data collection. This may be especially relevant for organisations that are unable to measure smaller or unknown emission sources (e.g. office food consumption, office wastewater, use of AI tools).

Data collection and emissions coverage should be updated yearly to reflect changes in activity data, emission factor updates, expansion of emission coverage and refinement of calculation methodologies. Such changes guarantee that emission tracking remains of high integrity, and that organisations can take responsibility for their emissions in the most transparent and accurate way possible.

Finding emission factors and measuring emissions

After collecting activity data, you need to find emission factors that match the data you have collected.

Many countries provide national-level emission factors through publicly accessible databases. These may also include worldwide emission factors. These are updated yearly. Some examples include:

* UK: Greenhouse gas reporting annual conversion factors
* France: Base Carbone
* Germany: Emission data
* US: GHG Emission Factors Hub

France's environmental agency also provides emission factors for products and other non-location specific activities:

* The ADEME's Impact CO_2 website

Some databases enable access to multiple sources of emission factors, but requires the creation of a free account:

* Climatiq's data explorer: Climatiq Data Explorer - Search Global Carbon Emission Factors

Some companies provide emissions for their sold products. Organisations can consult the product environmental footprint disclosures and sustainability reports of companies (e.g. on a phone manufacturer's website) to find product-specific emission factors.

Once organisations have both activity data and emission factors for the most important emission sources, they can calculate their emissions by multiplying one by the other.

Measuring emissions from important emission sources

This guidance will explore in more detail how to calculate emissions from building energy use and air travel. These emissions categories will likely be significant for most smaller organisations and organisations that may face difficulties in accessing accurate data or calculating emissions correctly.

For organisations that do not already have an internal tool for measuring emissions, we have developed a freely accessible tool to calculate your main emission sources. The tool will be updated on a yearly basis to reflect changes in emission factors and calculation methodologies, and new emission sources.

→ **Find out how to calculate emissions with the GHG Emissions Calculator.**

The GHG Emissions Calculator is a unique, open-access tool developed by NewClimate Institute to help organisations calculate their greenhouse gas emissions. This tool was created with CSOs and foundations in mind to help them get started on the first step of the Climate responsibility approach: Measure emissions.

Measuring emissions from building energy use

Gathering data on building energy use

To calculate emissions from purchased energy, your organisation needs to collect data on total fuel, electricity, steam, heating and cooling used for leased or owned buildings (e.g. offices, factories, warehouse). For this, you first need to understand which energy sources and technologies are used for electricity, heating, and cooling in your buildings. Energy bills and data provided by building managers may provide a potentially misleading impression about the type of energy sources and technologies used (see issues below on data accuracy): often, heating may be provided by a combination of sources and technologies, although this may not be apparent if only one appears transparently in energy bills. Most office-based organisations will rent offices in buildings that are powered by natural gas boilers, gas-fired combined cooling, heat and power (CCHP) units, or district heating, along with electricity.

Accessing energy data when you are renting a building will require you to:

* Contact your building owners or managers for data on energy consumption for heating and cooling;
* Retrieve data for electricity consumption from utility bills or readings from smart meters.

Accessing accurate data on heating and cooling from building owners or managers and utility bills may be particularly difficult for smaller organisations, due to the following challenges, among others.

Energy consumption data may capture only part of the energy system effectively in use. This may be the case if energy consumption data appears unusually low. For example, a leased office may be heated through both a shared building-wide ventilation system and a liquid-based heating with radiator, but only the liquid-based system may appear on your organisation's heating energy bills. The ventilation of a shared building may not show up on utility bills but may instead only appear as an extra expense under shared building operating costs, without any clear indication that this cost is additional to the organisation's own utility bills. Your organisation should double-check what its heating system is and whether the numbers on the bills represent its building's entire energy consumption.

The attribution of energy consumption between different users of a shared building may be incorrect. This may be the case if energy consumption appears unusually high. If this is the case, you may have been attributed a share of the building's heating that your organisation

is not responsible for, which can happen if there are errors in the allocation of energy meters to office areas and organisations. In this case, organisations could physically double-check and clarify with building managers and utilities which energy meters really apply to them and adjust their energy consumption data accordingly.

Organisations may only have access to the total cost of energy consumption. This may be at the level of leased office, for instance, but could also be calculated at the level of shared building and simply shared equally among office units. If this is the case, organisations can only derive approximate estimates on energy consumption based on the estimated cost per kWh of energy consumed. If this data is only available at the shared building level, it can still be used to derive an order of magnitude, but it will not be possible to track changes associated with energy efficiency measures taken by the organisation over time.

If your organisation does not have access to any data on energy use for heating and cooling, you can try to find proxy data or average data according to local or national building energy use estimates.

To address these challenges and enhance the quality of data available for measuring emissions and planning actions, organisations should proactively engage with building owners and utilities to request better information.

Measuring emissions from building energy use

Two main approaches exist to calculating energy-related emissions: market-based and location-based approaches.

* The **market-based method** is a way to calculate electricity emissions based on the specific energy providers an organisation buys from, accounting for certificates like Renewable Energy Certificates (RECs).
* The **location-based method** quantifies scope 2 GHG emissions based on the average emissions intensity of a defined geographic location, ranging from local to national. This method does not account for differentiated electricity purchases. Individual organisational choices regarding electricity contracts, supplier choices, or certificate purchases. For example, if an organisation has a contract for 'green' electricity with its local electricity provider, this will not be reflected in this method.

We recommend that organisations use location-based emission calculation methods. Market-based methods are not used here because, even if an organisation decides to use a renewable energy supplier which invests in its own renewable energy projects, this does lead to

emissions reductions beyond the organisation's own boundaries, in the national grid (NewClimate Institute, 2025). Using location-based approaches therefore provides a conservative calculation of emissions from building electricity use.

To calculate location-based emissions, organisations should use emission factors that represent the average emissions from energy generation occurring within a defined geographic area, and during a defined time period, for different energy sources.

Organisations can find emission factors from local energy providers or country-wide factors provided by national databases.

If organisations generate their own electricity (e.g. through rooftop solar photovoltaic or PV installations) they can apply an emission factor of 0 tCO_2e/kWh of electricity generated. This is because renewable energy, such solar, wind, geothermal, and hydropower, have no direct emissions at the point of electricity generation. If the company sells extra renewable electricity to the grid but wants to keep the right to call it zero-emission, it must not sell the certificate that proves it is clean (called an EAC).

Measuring emissions from business travel

This category includes emissions from the transportation of employees for business-related purposes in vehicles owned or operated by third parties, such as aircraft, trains, buses, and passenger cars. It can also include emissions from staying overnight in hotels.

There are several ways to track business travel data:

* Automatic tracking of distance travelled by mode through a travel agency or other travel providers.
* Automatic tracking of distance travelled by mode through internal expense and reimbursement systems, which may require adding new questions on distance travelled and mode of transport to travel on expense forms submitted by employees.
* Working with travel providers to obtain GHG emissions data. We do not recommend organisations to use such data, as it often does not account for non-CO_2 climate forcers in emissions calculations from flights.

atmosfair's flight calculation tool
atmosfair is a German non-profit organisation that implements CO2 mitigation projects.

We recommend the second option for collecting travel data. Organisations will need to add these questions to internal travel reimbursement systems:

* For flight emissions: employees need to calculate their emissions separately. For that purpose, we recommend using the *atmosfair's flight emissions calculation tool*. To make sure the tool is filled out correctly, organisations should guide employees with recommendations on how to fill out the atmosfair tool.
* For other modes of transport: organisations should ask their employees to provide:
    * Total distance travelled (in kilometres)
    * Mode of transport used
* Several lines should be added to the travel expense report in case several modes of transport are used for the same business trip.

If organisations wish to bill the costs related to the climate impact of their travel emissions, they may add the calculation for the emissions and costs within the expense file.

When filling out the atmosfair calculation tool, users should fill out the booking class and layover(s) along with the aircraft type.

Shorter-term flight cancellations should also, if possible, be treated as if the flight were taken, based on the assumption that the plane seat would have remained empty.

Climate impact of travel

Impact of air travel (in kg CO2e):	0.00

other modes of transport:

Distance travelled (in km)	Mode	Impact (kg CO2e)
	Select from dropdown list.	0.00
0		0.00
0		0.00
	Total kg CO_{2e}:	**0.00**
	Costs related to climate impact:	**0.00 €**

IMG 1: Example of an automatic tracking of distance travelled through internal expense and reimbursement systems

Measuring emissions from investments

For foundations and other organisations with substantial investments, emissions from investments (category S3.15 of the GHG Protocol) will likely represent the largest source of emissions. Financial institutions, including foundations, that invest in or facilitate high-emission assets bear responsibility for their proportionate share of financed emissions. Investment, lending, and underwriting activities generate, on average, over 700 times more emissions than their direct operational emissions (CDP, 2021). We therefore recommend that foundations measure the climate impact of their investments.

Calculating emissions from investments will differ depending on the type of investment (e.g. equity, bonds, project finance). For equity investments, this will require gathering emissions data from investees and multiplying these emissions by the share of equity your organisation holds in that company. Organisations can also use an average data method, where average emissions from the investee company are estimated based on their product portfolio.

Organisations with financed emissions can calculate those emissions using the Platform for Carbon Accounting Financials (PCAF's) guidance.

Reporting and communicating your emissions inventory

See Step 6 Communicate transparently for a reporting template and for more detailed information on how to transparently report emissions and changes made to emissions calculations.

The Climate Contribution Hub is set up by NewClimate Institute with initial support from the Allianz Foundation. This website aims at providing step-by-step guidance to help businesses and civil society organisations (e.g. NGOs, foundations, trade-unions) measuring and reducing their greenhouse gas emissions and setting up a climate contribution to take responsibility for their ongoing emissions.

www.climateresponsibility.org

Climate Contribution Hub