



Methodological guide

Humanitarian Carbon Calculator

Aggregation tool

Written by:
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climate responsibility “how to
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reduce GHG emissions”

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About this document

The document was written by EcoAct with the help of the Globalt Fokus (Climate Responsibility Project), CHORD, the IFRC and ICRC.

This practice oriented how-to guide walks through the key steps of how organizations can run an engaging and solid process for accounting for GHG emissions, setting targets and making a climate action plan.

This guide is meant to be used with the Humanitarian Carbon Calculator, which will help you calculate your organization's carbon footprint

Link to the tool and the user guidance: https://www.climate-charter.org/humanitarian-carbon-calculator/?mc_phishing_protection_id=28048-cedhffn0s0v87m293gdg

The guide includes a combination of:

- Guidelines and key principles of GHG Protocol
- Setting carbon accounting boundaries
- How to collect data and what kind of data is needed to realize a carbon footprint
- How to use and find emissions factor
- How to improve carbon accounting

Acronyms

(ADEME)	French Agency for Ecological Transition
(CEDA)	Comprehensive Environmental Data Archive
(CH₄)	Methane
(CO₂)	Carbon dioxide
(CO₂e)	Carbon dioxide equivalent
(DRC)	Danish Refugee Council
(GF)	Globalt Fokus
(GDP)	Gross domestic product
(GHG)	Greenhouse gas
(GWP)	Global warming potential
(HCC)	Humanitarian Carbon Calculator
(HFC)	Hydrofluorocarbon
(IPCC)	Intergovernmental Panel on Climate Change
(KG)	Kilogramme
(kg CO₂e)	Kilogramme of carbon dioxide equivalent
(L)	Litre
(N₂O)	Nitrous oxide
(PFC)	Perfluorocarbon
(SF₆)	Sulphur Hexafluoride
(tCO₂e)	Tonne of carbon dioxide equivalent
(WRI)	World Resources Institute

Glossary

Average-data method – estimates emissions for goods and services by collecting data on the mass (e.g., kilograms or pounds), or other relevant units of goods or services purchased and multiplying by the relevant secondary (e.g., industry average) emission factors (e.g., average emissions per unit of good or service).

CO₂ equivalent (CO₂e) – The universal unit of measurement to indicate the global warming potential (GWP) of each of the six greenhouse gases, expressed in terms of the GWP of one unit of carbon dioxide. It is used to evaluate releasing (or avoiding releasing) different greenhouse gases against a common basis.

Emission factor – A factor allowing GHG emissions to be estimated from a unit of available activity data (e.g. tonnes of fuel consumed, tonnes of product produced) and absolute GHG emissions.

Global Warming Potential (GWP) – A factor describing the radiative forcing impact (degree of harm to the atmosphere) of one unit of a given GHG relative to one unit of CO₂.

Intergovernmental Panel on Climate Change (IPCC) – International body of climate change scientists. The role of the IPCC is to assess the scientific, technical and socio-economic information relevant to the understanding of the risk of human-induced climate change (www.ipcc.ch).

Secondary emission factors – Emission factors that are not specific to activities within a company's value chain.

Scope 1 inventory – A reporting organization's direct GHG emissions.

Scope 2 inventory – A reporting organization's emissions associated with the generation of electricity, heating/ cooling, or steam purchased for own consumption.

Scope 3 inventory – A reporting organization's indirect emissions other than those covered in scope 2.

Spend-based method – Estimates emissions for goods and services by collecting data on the economic value of goods and services purchased and multiplying it by relevant secondary (e.g., industry average) emission factors (e.g., average emissions per monetary value of goods).

Upstream emissions – All emissions generated by the activities of extraction, production and transportation relative to the supply chain.

Introduction

As climate change impacts become more prevalent every year, and as related regulation strengthens, estimating the greenhouse gas (GHG) emissions that an organization's activities generate is rapidly becoming a standard practice, including for the humanitarian sector. This assessment of the GHG emissions associated with an organization's activities for a given period is called carbon accounting.

In those matters, a few pilots' organizations, led by ICRC, co-designed a carbon accounting tool that is specific to the humanitarian sector, following an international standard, the GHG Protocol. This document will help all organizations understanding what GHG Protocol is, and how implementing a carbon accounting process and going further throughout reductions levers.

In this context, the Sustainable Supply Chain Alliance, a collaboration project lead by the ICRC to strengthen the integration of sustainability principles into humanitarian logistics, held large consultations (with over 100 humanitarian organizations) during 2021 to define a carbon accounting methodology that would both be specific to the humanitarian sector and follow an international standard, the GHG Protocol. The outcome of those consultations can be found in [this document](#). This methodology was then developed into a standard carbon accounting tool during 2022. This document aims at helping organizations, that which to use the Humanitarian Carbon Calculator to perform their carbon accounting, to understand what GHG Protocol is and what methodology have been applied to the humanitarian sector, how to implement a carbon accounting process and how to go further and implement reductions levers.

Link to the tool and the user guidance: https://www.climate-charter.org/humanitarian-carbon-calculator/?mc_phishing_protection_id=28048-cedhffn0s0v87m293gdg

GHG emissions accounting and reporting standard

GHG Protocol

The Humanitarian Carbon Calculator's carbon accounting follows the Greenhouse Gas (GHG) Protocol methodology.

This methodology was chosen because it is the most used and the most renowned GHG emissions reporting methodology worldwide. the Carbon Disclosure Project (CDP), the United Nations Global Compact (UNGC), World Resources Institute (WRI) and the World Wide Fund for Nature (WWF) that defines and promotes best practice in emissions reductions and net-zero targets in line with climate science—recommends this methodology.

The GHG Protocol provides standards and guidance for companies and other organizations preparing a GHG emissions inventory. It covers the accounting and reporting of the GHGs covered by the Kyoto Protocol. The standard helps companies prepare a GHG inventory that represents a true and fair account of their emissions.

Scope 1, 2 and 3 emissions

The GHG Protocol categorizes GHG emissions into three categories ("scopes") to indicate whether they are direct or indirect GHG emissions. This concept is illustrated in Figure 1.

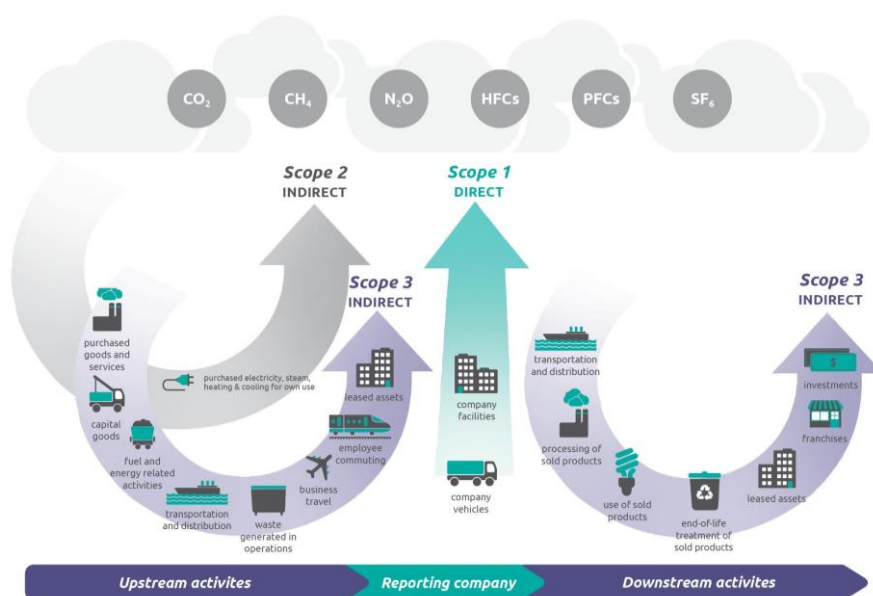


Figure 1. Sources of direct and indirect emissions [source: GHG protocol]

Scope 1 emissions

Scope 1 emissions are compulsory under the GHG Protocol and include direct GHG emissions from sources that are owned or controlled by the organization. This includes four main sources of emissions, detailed in Table 1.

Table 1: Scope 1 sources of emissions

GHG category	Source of emissions	Definition	Priority level
1-1	Stationary combustion sources	Emissions from the combustion of fossil fuels (natural gas, fuel oil, propane...) used in stationary machines. This includes for example heating from natural gas in buildings and the consumption of heat steam.	1
1-2	Mobile combustion sources	Emissions from the combustion of fossil fuels (gasoline, diesel...) used in the operation of vehicles or other mobile transportation owned or operated by the company. This includes for example the emissions of the consumption of diesel by the operated fleet of vehicles of an organization.	1
1-3	Process emissions	Emissions released during manufacturing processes (e.g., during the manufacturing of cement, CO ₂ is emitted).	1
1-4	Fugitive emissions	Emissions from unintentional releases of gas including refrigerant systems. The most common example is the leakage of refrigerant fluids used in refrigerant systems. Refrigerant fluids are highly powerful greenhouse gases and therefore, even if the leakages only concern a low quantity of fluids, the impact on the climate might be important.	1

Scope 2 emissions

Scope 2 emissions are compulsory and include indirect GHG emissions from the generation of purchased electricity, steam, cooling, or other sources of energy (e.g. chilled water).

GHG category	Source of emission	Priority level
2-1	Indirect emissions from electricity consumption	1
2-2	Indirect emissions from steam, heat and cooling consumption	1

Scope 3 emissions

Scope 3 emissions are voluntary and include other indirect GHG emissions that are a consequence of the operations of an organization but are not directly owned or controlled by the organization. It covers employee commuting, business travel, third-party distribution and logistics, emissions from the use of sold products, etc. Scope 3 emissions also includes the distribution losses of electricity transported along the grid. The GHG Protocol Scope 3 emissions are categorised into 15 categories (Figure 2).

GHG category	Source of emission	Priority level
3-1	Purchased Goods and Services	1
	In-kind donations	2/3
	Cash assistance	1/2
	Financial Support (upstream emissions)	1/2
3-2	Capital Goods	1
3-3	Fuel & Energy related to activities Not included in scope 1 & 2	1
3-4	Upstream transportation and distribution	1
3-5	Waste generated in operations	3
3-6	Business travel	1
3-7	Employee commuting	1
3-8	Upstream leased assets	Not relevant
3-9	Downstream transportation and distribution	1
3-10	Processing of distributed products	1
3-11	Use of distributed products	1
3-12	End-of-life treatment of distributed products	1
3-13	Downstream leased assets	Not relevant
3-14	Franchises	Not relevant
3-15	Investments	Not relevant
3.1 bis	In-kind donations	2/3
	Cash transfer	1/2
	Financial Support (downstream emissions)	1/2

Figure 2. Scope 3 sources of emissions



Key learnings from Globalt Fokus:

The GHG Protocol is not designed for organizations, and so there may be elements that are difficult to apply directly to your organization. As such, consider what is relevant for your organization given your activities and the accountability you have of these. The key thing is to document which assumptions and decisions you have made when estimating your baseline.

GHGs included in the carbon footprint

The carbon accounting covers the carbon dioxide gas and the five others GHGs for the three scopes, all covered by the Kyoto Protocol, namely: methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆). The details of each GHGs is available for scope 1 and 2 only.

Standard ratios are used to convert the various gases into equivalent amounts of CO₂. These ratios are based on the global warming potential (GWP) of each gas, which describes its total warming impact relative to CO₂ over a set period – usually a hundred years (Appendix 1). For example, one tonne of CH₄ is equivalent as 28 tonnes of CO₂ in terms of heat trapping potential.

CO₂ equivalents (CO₂e) are commonly used to express a carbon footprint consisting of several GHG gases using a single number. The idea is to express the impact of each different greenhouse gas in terms of the amount of CO₂ that would lead to the same warming.

As such, the emission factors used in this study cover the above-stated gases and are expressed in kg CO₂e/unit of input data.

GHG emission calculation method

Even though measuring the concentration of GHGs in the air is a common practice, it is only under exceptional circumstances that GHG emissions can be directly measured from a given activity. This method is by no means realistic for organizations.

The only practical way to estimate GHG emissions is to use a calculation method based on activity data (for example, number of trucks, distance travelled, quantity of steel bought, etc.).

4 illustrates how an activity can be converted into GHG emissions, expressed in CO₂ equivalent (CO₂e), by using GHG emission factors.

GHG emissions factors are not available for all kind of activity data. Therefore, in certain situations, it is necessary to modify the activity data in order that it fits with the emissions factors or to adapt the emissions factor in order that it fits with the activity data. Therefore, Figure 3. Calculation of GHG emissions (in theory and for one example) refers to the simplest situation only (but also the most common one).

An example of a most complex situation is the computation of the emissions related to freight. Activity data available are the quantity of goods transported (t) and the distance travelled (km), while the unit of the emissions factors is kg CO₂e/t.km. Therefore, the quantity is multiplied by the distance to get a figure in t.km that can be multiplied by the emissions factors to compute the GHG emissions (kg CO₂e).

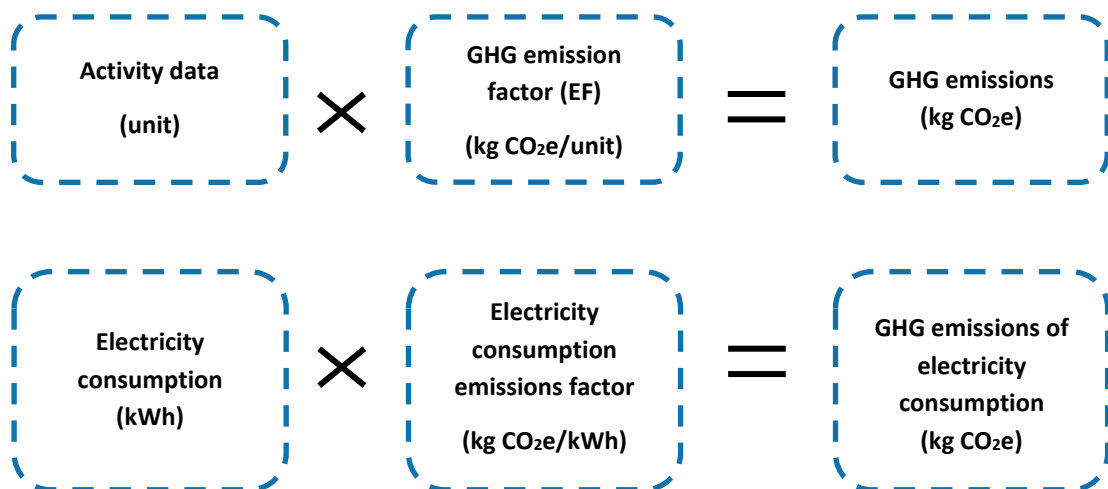


Figure 3. Calculation of GHG emissions (in theory and for one example)



If you want to know more about Carbon accounting?
You can refer to the [Carbon accounting principles video](#)

Carbon accounting boundaries for humanitarian organizations

The study boundaries define what is included in the calculation of the carbon assessment. The methodology uses the concept of “scope” based on definitions from the WRI GHG Protocol Corporate Accounting and Reporting Standard, when defining the boundary to be included in the GHG inventory.

Accounting period

The carbon accounting period is based on an annual reference year and can cover a calendar year, or fiscal year. The first reference year for which an organization is doing its carbon accounting is usually referred to as the baseline year.



Key learnings from Globalt Fokus:

WHY MAKE A CO₂e-BASELINE?

A CO₂e-baseline can be used to provide organizations a structured, comprehensive understanding of the climate impact of their organization throughout the whole value chain. It can be used to:

- Initiate reduction measures
- Set a public target and commit to it internally and externally
- Start a dialogue with suppliers to green your supply chain
- Engage with stakeholders about how to contribute to their climate goals
- Anchors change among employees

Organizational boundaries

Organizational boundaries define the parts of an organization that will be included under the carbon accounting. In the case of humanitarian organizations, one should determine whether the carbon accounting will cover all offices and activities, or only a portion of those (e.g., HQ only, or 1 region only).

Organizational boundaries are set out based on operational control. For example, in case of a project run through a partnership, an organization should determine whether emissions related to the project are accounted for, based on how much control the organization has over the activities.

In the Humanitarian Carbon Calculator, emissions can be calculated globally, and results can be then disaggregated using one characteristic, such as geographical location



Key learnings from the humanitarian project and Globalt Fokus:

In terms of selecting which part of the organization is covered by the CO₂e-baseline, most organizations have in the first year prioritized the headquarters and 2-3 country offices. This selection is viewed as ‘pilot projects’ to gain experience to roll out carbon accounting across remaining country offices. One way to approach the roll out, is making the baseline process voluntary, but set a target year for when all country offices should have completed their baseline.

If organizations decide to start by estimating their baseline for a limited scope, they should make a clear plan for broadening the scope in years to come. Furthermore, when communicating baseline results, organizations must be transparent about scope and key assumptions and make it clear which part of the organization is and is not covered.

Operational boundaries

The operational boundaries correspond to the categories and GHG emissions sources associated with the organization's operations included in the organizational scope. The operational scope for the organization's carbon accounting includes the following categories (the categories in grey are excluded) and have been prioritized during the "humanitarian methodology development" process in 2021.

Scope	#	Emission categories	Priority level
Scope 1	1-1	Direct emissions from stationary combustion sources	1
	1-2	Direct emissions from mobile combustion sources	1
	1-3	Direct emissions from processes	1
	1-4	Direct fugitive emissions	1
Scope 2	2-1	Indirect emissions from electricity consumption	1
	2-2	Indirect emissions from steam, heat and cooling consumption	1
Scope 3	3-1	Purchased Goods and Services In-kind donations Cash transfer Financial Support (upstream emissions)	1 2/3 1/2 1/2
	3-2	Capital Goods	1
	3-3	Fuel & Energy related to activities Not included in scope 1 & 2	1
	3-4	Upstream transportation and distribution	1
	3-5	Waste generated in operations	3
	3-6	Business travel	1
	3-7	Employee commuting	1
	3-8	Upstream leased assets	Not relevant
	3-9	Downstream transportation and distribution	1
	3-10	Processing of distributed products	1
	3-11	Use of distributed products	1
	3-12	End-of-life treatment of distributed products	1
	3-13	Downstream leased assets	Not relevant
	3-14	Franchises	Not relevant
	3-15	Investments	Not relevant
	3.1 bis	In-kind donations Cash transfer Financial Support (downstream emissions)	2/3 1/2 1/2

Figure 4. All GHG emissions categories included for the humanitarian carbon calculator

Inclusions: all categories in red have been included, following the GHG methodology, and applied to the specificities of the humanitarian sector:

- Direct emissions from stationary combustion sources (category 1.1)
- Direct emissions from mobile combustion sources (category 1.2)
- Direct emissions from processes (category 1.3)
- Direct fugitive emissions (category 1.4)
- Indirect emissions from electricity consumption (category 2.1)
- Indirect emissions from steam, heat and cooling consumption (category 2.2)
- Purchased Goods and Services / In-kind donations / Cash transfer / Financial Support (category 3.1 and 3.1 bis)
- Capital Goods (category 3.2)
- Fuel & Energy related to activities Not included in scope 1 & 2 (category 3.3)
- Upstream transportation and distribution (category 3.4)
- Waste generated in operations (category 3.5)
- Business travel (category 3.6)
- Employee commuting (category 3.7)
- Downstream transportation and distribution (category 3.9)
- Processing of distributed products (category 3.10)
- Use of distributed products (category 3.11)
- End-of-life treatment of distributed products (category 3.12)

Exclusions: the categories in grey have been excluded because they are out of the operational scope of the humanitarian sector:

- Upstream leased assets (category 3.8)
- Downstream leased assets (category 3.13)
- Franchises (category 3.14)
- Investments (category 3.14)



Key learnings from Globalt Fokus:

The second step is to select which operations to include in your baseline, that is, which Scope 3 categories to include (Scope 1 and Scope 2 are mandatory to report). Scope 3 emissions are optional, though encouraged to report and you should justify why any Scope 3 categories have been excluded from the inventory. When setting the operational boundary (i.e. selecting Scope 3 categories), consider these principles:

- **Relevance:** Ensure the GHG inventory appropriately reflects the GHG emissions of the organization and serves the decision-making needs of users – both internal and external to the organization
- **Completeness:** Account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusions
- **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
- **Consistency:** Use consistent methodologies to allow for meaningful comparisons of emissions over time.
- **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

The GHG Protocol acknowledges that accounting for all Scope 3 emissions may not be feasible, at least not in the short term, and that some categories may not be applicable to your organization. It also recognizes that you get smarter over time and that your first baseline may not be perfect. However, as stated above, you should be transparent on coverage and underlying assumptions, and you should make a plan for how to broaden the scope in years to come.



If you want to know more about Carbon accounting?
You can refer to the [Carbon accounting principles video](#)

Collecting data: the first year of carbon accounting

The GHG Protocol methodology requires to display the calculated GHG emissions per scope and per each specific scope category. All emission sources, and scopes (1,2 and 3) are to be included in following the GHG protocol methodology inventory, following the priority levels.

This section of the report provides a guideline on how to realize a carbon footprint for the first time, which includes the methodologies available (Spend Based vs Average data based, or Supplier Specific) for scope 3, but also examples of which data need to be collected or how to fill in missing data by doing estimation or proxy.

Note: for scope 1 and 2, the average based data is the only one possible. However, the organization can choose to use a market-based or a location-based emission factor for scope 2 (for more explanation [see here](#)).

Average based vs Spend based methodologies

Conducting a carbon accounting exercise is extremely data-heavy, as it requires organizations to collect relevant input data for all the scopes and emission sources within their organizational and operational boundaries and matching these with relevant emissions factors (see Figure 3 for a simple example of how to calculate GHG emissions).

Therefore, humanitarian organizations, particularly those conducting their first carbon accounting, should review the data needs of the below calculations methods and prioritize data collection based on their data availability and the objective of their carbon accounting. The calculation methods can then be revised in later carbon accounting exercises to gradually obtain more precise results.

1

Supplier specific data method – estimates emission by collecting the actual emission based on your supplier (e.g. actual emission per € based on suppliers).

2

Average-data method – estimates emissions by collecting data on the mass (e.g., kilograms or pounds), or other physical other relevant unit of the estimated emission category and multiplying by the relevant emission factors (e.g. average emissions per kilograms of products).

3

Spend-based method – estimates emissions by collecting data on the economic value of goods and services purchased (e.g. k€ of insurance service purchased) and multiplying it by relevant emission factors (e.g. average emissions per monetary value of service purchased).

A few steps are necessary when using the spend based approach

- Step 1: Exclude the VAT from all monetary data of your reporting year (e.g. purchasing of services, humanitarian products, capital goods, etc.)
- Step 2: Convert the monetary data from your local currency into EUR, and more specifically k-EUR (dividing by 1,000)
- Step 3: Adjust inflation for the monetary emission factors (see section [Monetary emission factors: adjusting inflation](#))

	 Spend-based (high-level)	 Average-data based	 Supplier-specific (actual data)
Basis for calculation	Per spend: Average emission per DKK spent within this category across all SKU's, suppliers, etc.	Per weight/ other metric: Average emission per weight/ other metric for this category of product	Per SKU/supplier: Actual emission per SKU based on supplier, country of origin, etc.
Advantages	• Quick calculation, if knowledge of materials or specific product type is unknown • Gives a broad overview of emissions CO₂e emissions • Enables completeness of activities even in early years	• Relatively precise CO₂e calculations • Possibility to work more strategically with CO₂e emissions	• Most precise CO₂e calculations • Good foundation to work strategically with CO₂e emissions
Dis-advantages	• Unprecise and difficult to use strategically in terms of reducing emissions	• Requires relatively high data quality • Can be time consuming	• Requires very high data quality • Likely rather time consuming
Applicability	• Can be used to identify which categories to prioritize collecting more detailed information on	• Can be used to identify which suppliers to engage with, to get more detailed information	• Accurate CO₂e baseline calculation for selected categories

Figure 5. Synthesis of both methodologies made by Globalt Fokus



Key learnings from Globalt Fokus:

Creating a comprehensive and exhaustive scope 3 baseline can seem like a daunting task. As such, it can be beneficial to start by calculating a “spend-based baseline” based on spend and then prioritize the most important areas to collect more sophisticated data.

In general, you should over time seek to improve the breadth and depth of data collection by replacing lower quality data with higher quality and more accurate data as it becomes available. This also means that if there are areas of your business where no data is currently available, or where the data quality is particularly poor, discuss with a relevant data owner how this data can become available in years to come.

At the end of each baseline process, you should make a list of the key priorities for improving data availability and/ or quality.



Figure 6. Iterative process illustrated to improve data quality made by Globalt Fokus

Collecting data

The table below are giving examples of the data which is expected to be able to realize a carbon footprint (the examples are not exhaustive) and to be found in the Humanitarian Carbon Calculator.

Note, here is a few tips given regarding data collection

1

Start your data collection as soon as possible

- Takes time to collect the data needed (e.g. difficult to know where to start, find the right contact, data might not be available, need to make hypothesis)
- Involve every data holder from the beginning, to be able to compare the different sources of data

2

Prioritize your data collection according to the set boundaries of your carbon accounting exercise and the data availability in your organization

- Start small, where the data is available (e.g. scope 1 and 2, restrict your organizational boundary to a few entities)
- Concentrate the effort on the biggest sources of emission and/or where you have a leverage for action (e.g. energy and fugitive, purchased good and services, transportation, fixed assets, etc.)
- Collect the data according to the level of disaggregation needed for the results (e.g. if you need the result by countries then your data must be collected at a country level or identify a good proxy that can be used to split the global data by country)
- It is better not to “shoot for the moon” (e.g., don’t go for the supplier-specific data directly, unless that information is readily available within your organization)

3

Keeping track (very important !)

- Collect your data and save it in the same file (e.g. one tab at a global level, one tab for each country, one tab per category)
- Always indicate the source of the data for each data (e.g. accounting class 6 accounts, facility invoices)
- Always indicate the contact person holding the data (e.g. facility manager’s name, person in charge of centralizing the data)
- Always keep a written track of your hypothesis / estimations, so you can either use the same hypothesis the next year or improve the data collected

Table 2: Some examples of data needed for each category (non-exhaustive list)

Energy	Sub categories	Example of data needed	Unit
	Stationary combustion	Natural gas	kWh/m3
		Petrol	Litre
		Fuel oil	Litre
	Mobile combustion (from owned or operated vehicles)	Petrol	Litre
		Diesel	Litre
	Electricity (per country and organized by continents)	African continent (Niger, Nigeria, Senegal, etc.)	kWh
		Asian continent including Middle East (Thailand, Laos, Pakistan, etc.)	kWh
		European continent (France, Denmark, Switzerland, etc.)	kWh
		All other continents...	kWh
	Steam, heat and cooling	Paris climespace network	kWh
		District heat and steam	kWh
Fugitive emissions	Sub categories	Example of data needed	Unit
	Fugitive emissions	Refrigerant NF3	Kg
		Refrigerant R410a	Kg
		...	kg

Tables 2: Some examples of data needed for each category (non-exhaustive list)

Goods and services	Sub categories	Example of data needed	Unit
	Financial support	Activity for human health	k-EUR
		Activity for voluntary organizations	k-EUR
	In-kind donations	Hospital equipment	k-EUR
		Textile and clothing	k-EUR
	Cash assistance (per country and organized by continents)	African continent (Niger, Nigeria, Senegal, etc.)	USD
		Asian continent including Middle East (Thailand, Laos, Pakistan, etc.)	USD
		European continent (France, Denmark, Switzerland, etc.)	USD
		All other continents...	USD
	Humanitarian products	Health and Care (Antiseptic, Kitchen set, Hygiene kit, Mattresses, T-shirt, Pharmaceutical products, etc.)	Unit, kg, litre, k-EUR
		Raw materials & machinery (Cardboard, Cement, Diesel generators, Papers, and plastics, etc.)	Unit, kg, tons, litre, m3, k-EUR
		Food, crop & breeding (Animal feed, Bottled Water, Canned foods, seeds, Wheat, Processed food products, etc.)	Unit, meal, kg, litre, k-EUR
	Hotels and restaurants	Hotel nights (from 1* to 5*)	Night
		Office restaurant	Meal
	Purchased goods (for offices purpose)	Paper and plastics	Tons
		Emails	Unit
		Small offices supply	k-EUR



If you want to know more about Carbon accounting?
You can refer to the [Humanitarian supplies](#) or [Cash Transfers](#) videos

Tables 2: Some examples of data needed for each category (non-exhaustive list)

Capital goods	Sub categories	Example of data needed	Unit
	Buildings	Office building	m ²
		Parking space	m ²
	Vehicles	Vehicle	Unit
		Truck	Unit
		Machinery and equipment	k-EUR
	Furniture & machinery	Furniture	Tons or k-EUR
		Machinery	Tons or k-EUR
	IT Equipement	Laptop	Unit
		Printer	Unit
		Purchase of IT and telecom equipment	k-EUR

Distributed Products	Sub categories	Example of data needed	Unit
	Use of distributed products	Coal (use phase)	Kg
		Charcoal (use phase)	Kg
		Fire-wood (use phase)	Kg
	Processed of distributed products	Petrol	Liter
		Diesel	Liter
		Fuel gas	Kg
	End-of-life of distributed products	Hazardous wastes (Wastes from care activities, wastes from construction, etc.)	Tons
		Non-hazardous wastes (plastic or organic waste)	Tons

Tables 2: Some examples of data needed for each category (non-exhaustive list)

Wastes generated in operation	Sub categories	Example of data needed	Unit
	Hazardous wastes	Wastes from care activities	Tons
		Medium WEEE	Tons
		Mixed cells and batteries - Average end of life	Tons
	Non-hazardous wastes (plastic or organic waste)	Household waste – waste treatment	Tons
		Housing waste -bedding - waste treatment	Tons
		Industrial organic waste - waste treatment	Tons

Travels	Sub categories	Example of data needed	Unit
	Business travels	Air travels (short, medium or long haul)	Passenger.km or k-EUR
		Road travels (cars, taxi, trains)	Passenger.km or k-EUR
	Employee commuting	Emissive mobility (fossil car, motorbike, taxi)	Km or k-EUR
		Low carbon mobility (bike, walking, work from home)	Km or k-EUR
	Volunteer travels	Air travels (short, medium or long haul)	Passenger.km or k-EUR
		Road travels (cars, taxi, trains)	Passenger.km or k-EUR

Tables 2: Some examples of data needed for each category (non-exhaustive list)

	Sub categories	Example of data needed	Unit
Transportation	Upstream transportation	Air transportation (short, medium or long haul)	Tons.km
		Road transportation (average truck, rigid truck)	Tons.km
		Sea travels (a continent from and to another continent e.g. Asia from and to Europe)	Tons.km
	Downstream transportation	Air transportation (short, medium or long haul)	Tons.km
		Road transportation (average truck, rigid truck)	Tons.km
		Sea travels (a continent from and to another continent e.g. Asia from and to Europe)	Tons.km



If you want to know more about Carbon accounting?
You can refer to the [Freight video](#)



Key learnings from Globalt Fokus:

When collecting data, either internally or externally, it is beneficial to send a data request. A data request should be as simple as possible and define:

- Time
- Scope/ coverage
- Format, structure and required breakdown/detail level
- Preferred unit
- Uncertainties - When receiving the data, make sure you understand any underlying assumptions

To motivate stakeholders, make the data collection process meaningful. For example, before sending a data request, reach out to the specific stakeholder and explain the final goal and how the data they provide will be used as part of the organization's climate ambitions. This makes buy-in from stakeholders more likely and encourages them to prioritize the data collection process to the extent possible.

Filling data gaps and creating estimates

When an organization does not have sufficient data, the use of a proxy data to fill data gaps can be used. A proxy data is defined as data from a similar activity that is used as a stand-in for the given activity. However, an organization should absolutely discuss on the long term to see how data can become available and make a clear roadmap for collecting more accurate data.

Proxy data can be either extrapolated, scaled up, or customized to be more representative of the given activity

Here are examples of proxy data:

- Electricity data exists for the Ugandan country office but not the Kenyan country office. Given similar office context and setup, the organization assumes consumption per square meter is similar and so estimate electricity consumed in Ugandan office using i) consumption per square meter from Kenyan office and ii) square meters of Kenyan office
- An organization collects data for 80% of its procurement for a given product category, but 20% is unknown. The organization assumes the unknown 20% has similar characteristics to the known 80% so applies a linear extrapolation to estimate 100% of the procurement data



If you want to know more about Carbon accounting?
You can refer to the [Carbon accounting principles video](#)

Emission factors

This section provides a guideline on how to choose an emission factor, to find a new emission factor, how to assess the uncertainty level of an emission factor, and how to adjust the inflation rate regarding monetary emission factors.

Choosing emission factor

When calculating a carbon footprint, the organization will have to collect the activity data regarding your base year (e.g. the Nigerian office have consumed 20 kWh of electricity in 2021) and associated it with the right emission factor (e.g. the electricity EF for Nigeria is 0,479 kgCO₂e/kWh)

When an emission factor is not available, the organization will have two solutions:

Solution 1: using the closest and “worst case” emission factor as a proxy (e.g. I have an office in Uganda that consumed 20 kWh of electricity, but there is no emission factor for electricity in Uganda available, I will choose an emission factor for electricity from the closest country that have the worst result I can choose Niger that is the worst one with 1,083 kgCO₂e/kWh)

Solution 2 : finding a new emission factor (see below)

Finding emission factors

For all activity data included in the carbon footprint, you must find a corresponding emissions factor. An emission factor is a representative value that relates the GHG emissions of a product, material, or activity, with the amount your organization have purchased or consumed. To the extent possible multiple emissions factor data points should be collected to validate the source.

Note: you should find emission factors estimated in CO₂e, to include all six greenhouse gases covered by the Kyoto Protocol: Carbon dioxide (CO₂), Methane (CH₄), Nitrous Oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur Hexafluoride (SF₆).

There are different methodologies to find an emission factor:

- Add a **generic emission factor** from a reliable, recognized, and international database (see the extract of possible databases below)

Table 3: An extract of possible databases

Data source	Relevant scopes	Key notes
ADEME	Scope 1, 2 and 3	French base open source; partially updated annually; Contains numerous average-based emission factors
IEA	Scope 2	Electricity and electricity & heating emission factors across all geographies.
DEFRA	Scope 1 and 3	Open source; Updated annually; Contains numerous average-based emission factors
Ecoinvent	Scope 1, 2 and 3	Paying access; Updated annually; Contains numerous emission factors for all countries and made from Life Cycle Analysis purpose
CEDA	Scope 1, 2 and 3	Paying access; Updated annually; Contains monetary emission factors, US based
EPD	Scope 3	Open source; Product-specific LCAs developed by manufacturers (e.g., construction materials)

- **Ask to your suppliers (supplier specific based method)** their emission factors, including uncertainty levels for a given purchase of goods or services, as it is a reliable source. The carbon impact of a supplier's can be estimated from the supplier's carbon footprint on the three scopes over the company's reporting year and divided by the expenditure associated with this supplier

Supplier carbon intensity
(tCO₂e/€) =

$$\frac{\text{Carbon footprint scope 1 + 2 + 3 (tCO}_2\text{e)}}{\text{Turnover (€)}}$$

- **Conduct a Life Cycle Analysis** of a product to get the most specific emission factor. A Life Cycle Analysis (or LCA) is a methodology for assessing environmental impacts associated with all the stages of the life cycle of a commercial product, from the extraction of raw material to the production and or/ the end of life of the product.



Key learnings from Globalt Fokus:

If you cannot find an emissions factor for the specific product, a proxy can be used (that is an emission factor for a similar product). If you use a proxy emissions factor, this should be stated when reporting. It should be noted that there may be different emission factors for the same product.

How to add an emission factor within the Humanitarian Carbon Calculator? Please report to [the user guidance](#), where all steps are explained.

Uncertainty level of an emission factor

For each of the methodologies following an emission factor, whether it is coming from a generic databased, or a specific LCA, you need to assess the uncertainty level of the emission factor.

The uncertainty level can be defined as “the lack of knowledge regarding the true emissions because of measurement errors, limited sample sizes (statistical random sampling error), and non-representativeness (which can introduce additional errors)” *North Caroline State University, 1999*

The uncertainty level associated with an emission factor is always calculated by the provider, never forget to ask them when adding a new emission factor.

Following the IPCC guideline about Quantifying Uncertainty in Practice, and regarding emission factors, it is said that “For most emission factors, source category-specific good practice guidance provides default uncertainty estimates that should be used in the absence of other information. Unless clear evidence to the contrary is available, the probability density functions are assumed to be normal. However, the inventory agency should evaluate the representativeness of the default for its own situation. If the default is judged to be unrepresentative and the source category is important to the inventory, improved assumptions based upon expert judgement should be developed.” IPCC, Quantifying Uncertainty in Practice, Chapter 6

Monetary emission factors: adjusting inflation

Following the GHG Protocol methodology regarding monetary emission factors, it is said that when applicable (e.g. the 2022 inflation rise), the inflation rate should be taken into account when the year between the activity data (e.g. the organization is doing its reporting in 2021) and the monetary emission factor (e.g. the emission factor when purchased of a services is from 2016) are different.

How to adjust inflation using the Humanitarian Carbon Calculator? Please report to the [user guidance](#), where all steps are explained.

Market based vs Location based for Scope 2

Following the GHG Protocol, any organizations that have operations in markets providing product or supplier-specific data in the form of contractual instruments shall report scope 2 emissions using both approaches.

Location-based method - reflects the average emissions intensity of grids on which energy consumption occurs (actual one used within the tool)

Market based method - reflects emissions from electricity that companies have purposefully chosen (or their lack of choice)



Key learnings from Globalt Fokus:

If your organisation buys Green Electricity certificates, we recommend communication to be based primarily on the location-based approach, since the Green Electricity certificates refer to an additionality of renewable electricity that does not necessarily exist.



If you want to know more about Carbon accounting?
You can refer to the [Emission factor video](#)

Data improvements opportunities: second year of carbon accounting

As explained in the introduction of the first year of carbon accounting, the improvement regarding your carbon footprint perimeter (organizational, categories) and your data.

Here is a guideline checklist for updating year 2, **created by the Globalt Fokus**

1

Revisit the organizational scope

- Are there any new parts of the organization (e.g., new facilities, new country offices, etc.), that should be included in the baseline? If so, gather data and update the baseline accordingly
- Are any old parts of the organization (e.g., closed country offices, cars no longer in the fleet etc.), that should be excluded from the baseline? If so, update the baseline accordingly

2

Revisit Scope 3 categories included in the baseline and check if there are any more categories that should be included (and similarly, any categories that are no longer relevant). For example, if you have made a CAPEX investment in the reporting year, and there were no CAPEX investments in the previous year, you should include Scope 3 Category 2

3

Revisit the data collection approach for the categories where the spend-based approach has previously been used and see if average-data is now available (similarly check if average-data can be replaced with supplier-specific data)

- If this change in method significantly impacts the baseline, you should adjust the previous years' emission estimates to the same method (for example through extrapolation based on spend on the given category or FTEs). This will enable a like-for-like comparison
- Ensure only one data approach per activity – that means if you used spend-based method last year, but activity-based this year then delete the spend-based data from the excel model

4

Collect all data for the reporting year (following the point above)

- Include all raw data in the Excel model so you always can revert to the original data sources if needed and to be able to answer questions related to the data and approach. It also eases a potential model hand-over to a colleague

5

Update old emission factors and find new emission factors

- Update old emission factor and find new emission factors for the given year by checking the same data source (e.g., DEFRA releases a new data source every year)
- For spend-based emission factors, update the inflation factor as described in the [user guidance](#)

6

Document changes and assumptions

- If there is a reduction in the baseline that is not driven by an actual reduction in emissions, but rather by a change in methodology, this needs to be documented and disclosed in reporting and communication

References

The Humanitarian Carbon Calculator

Taking Climate Responsibility, *Globalt Fokus*

https://globaltfokus.dk/images/Klima2021/Climate_Responsibility_Project_-_How-to_guide_Jun2022.pdf?mc_phishing_protection_id=28048-cc6ksdv0s0vafd5qc59q

Scope 2 Guidance on location based vs market based, *GHG Protocol*

https://ghgprotocol.org/sites/default/files/standards/Scope%202%20Guidance_Final_Sept26.pdf

Quantifying Uncertainties in Practice, *IPCC* [https://www.ipcc-](https://www.ipcc-nggip.iges.or.jp/public/gp/english/6_Uncertainty.pdf)

[nggip.iges.or.jp/public/gp/english/6_Uncertainty.pdf](https://www.ipcc-nggip.iges.or.jp/public/gp/english/6_Uncertainty.pdf)

WRI, *The Greenhouse Gas Protocol A Corporate Accounting and Reporting Standard*,

<https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

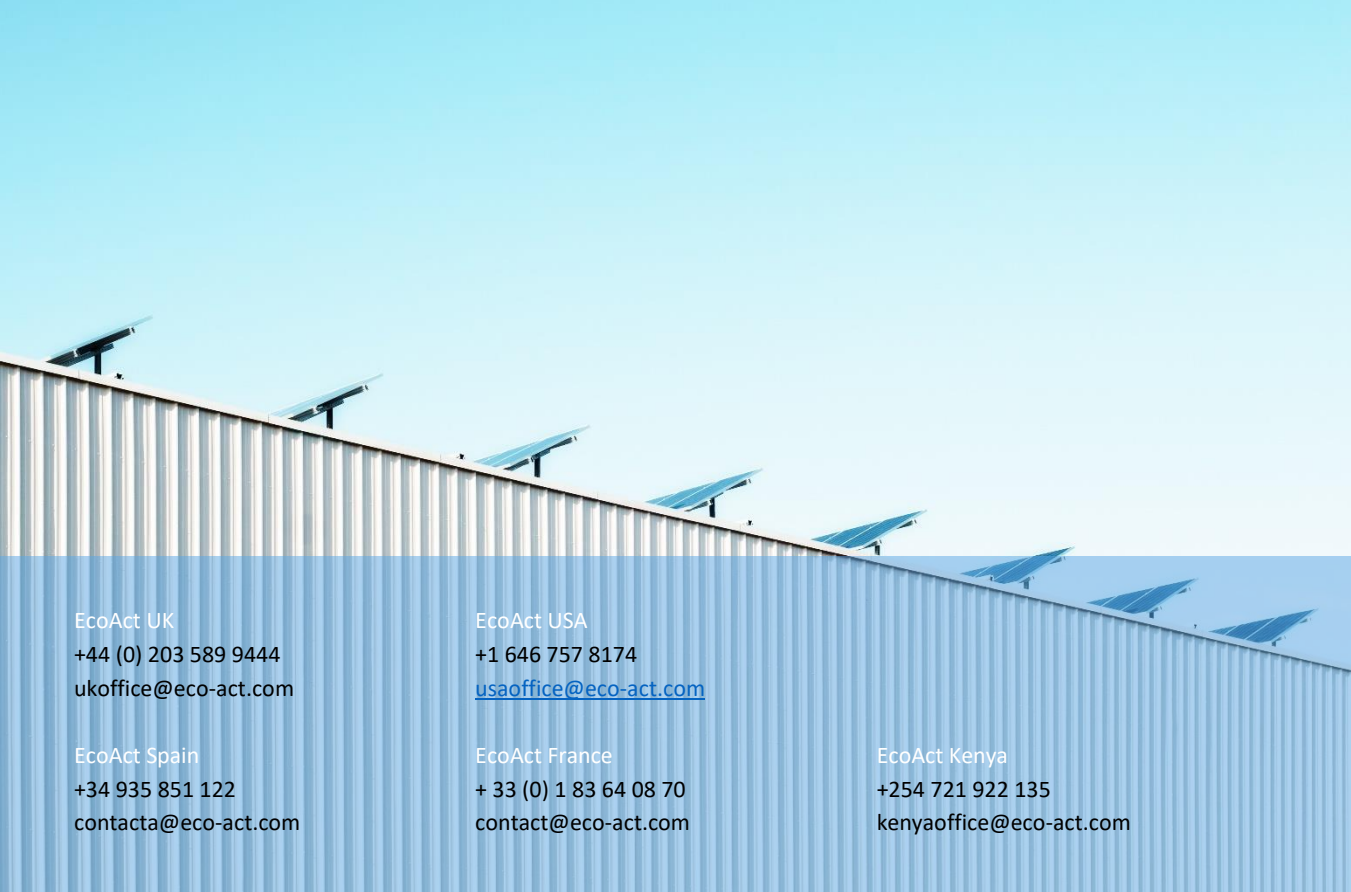
WRI, *GHG Protocol Technical Guidance for Calculating Scope 3 Emissions*,

https://ghgprotocol.org/sites/default/files/standards/Scope3_Calculation_Guidance_0.pdf

Appendix

Appendix 1: 100-year time horizon global warming potentials [source: 5th Assessment Report, IPCC, 2014]

Gas	Chemical formula	GWP (100yrs)	Principal origins
Carbon dioxide	CO ₂	1	Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and wood products, and as a result of certain chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.
Methane	CH ₄	28	Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
Nitrous Oxide	N ₂ O	265	Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
Perfluorocarbons	C _n F _{2n+2}	6 630 to 11 100	Perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydrochlorofluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases").
Hydrofluorocarbons	C _n H _m F _p	4 to 12 400	
Sulphur hexafluoride	SF ₆	23 500	



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