Greenhouse gas emission calculator

GUIDELINES

2024

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Introduction

The GHG Emissions Calculator is a user-friendly tool designed to estimate annual greenhouse gas (GHG) emissions for small, medium businesses and as well as whole organizations. Its goal is to simplify the process of calculating emissions in scope 1 and 2.

This tool allows users to easily introduce their organization's activity data and navigate through the Excel file. By utilizing this calculator, businesses can gain valuable insights into their emissions and take meaningful steps towards reducing their environmental impact.

In order to be able to efficiently navigate the tool, a manual has been prepared. It is divided into three parts:
– Methodology
– Overview of the tool
– Glossary

As for the methodology, the calculation is based on GHG Protocol, which means that in scope 1 the tool collects data on fuel combustion, refrigerant replenishment and if applicable direct emissions from agriculture, and in scope 2 data on energy. Calculation approaches and emission factors come from five databases: AIB, CIBSE, DEFRA, EXIOBASE, New Zealand's Greenhouse Gas Inventory 1990–2021 (only agricultural-specific topics) and national sources.

In the second part – an overview of the tool, you will get acquainted with the tool step by step. At each step, it is shown what you need to enter and what data you need to provide if you have no real consumption in a particular category.

The last chapter is a glossary that will help you understand the terms used in the tool.

The calculation should be considered as a carbon footprint estimate only. It does not represent exclusive calculation methodology and does not take exhaustive account of all circumstances affecting the calculation of the carbon footprint.

Methodology

GHG Protocol

The GHG Protocol, or Greenhouse Gas Protocol, has been widely adopted and serves as the basis for many greenhouse gas reporting programs and regulations around the world. The protocol is a set of internationally recognized standards and guidelines for accounting and reporting greenhouse gas emissions and provides a framework for organizations to measure, manage, and report their greenhouse gas emissions accurately and consistently.

The GHG protocol outlines the principles and methods for measuring and reporting emissions from an organization's activities and categorizes all emissions into three scopes:
– direct emissions (Scope 1),
– indirect emissions from purchased electricity and heat (Scope 2),
– other indirect emissions (Scope 3).

Scopes of emissions

Scope 1 emissions refer to direct greenhouse gas emissions from sources that are owned or controlled by the organization. These emissions are generated from activities such as the combustion of fuels in on-site equipment, vehicles, and industrial processes. Examples include emissions from company-owned vehicles, on-site heating, and use of refrigerants.

Scope 2 emissions are indirect greenhouse gas emissions associated with the generation of electricity, heating, or cooling that an organization purchases or consumes. While the organization does not directly control the sources of these emissions, they are related to the organization's energy consumption. Organizations can influence Scope 2 emissions by choosing to purchase cleaner, renewable energy sources or by improving energy efficiency.

Scope 3 emissions encompass all other indirect emissions that occur because of organization's activities but do not fall under Scope 1 or Scope 2. GHG Protocol sets 15 categories that fall under Scope 3 emissions and they are typically more challenging to quantify and manage because they extend throughout the organization's value chain, including suppliers, customers, and other stakeholders. Scope 3 emissions can include emissions associated with supply chain activities, business travel, employee commuting, product transportation, and the use of sold products to name a few.

They represent a significant portion of a company's overall carbon footprint, and measuring and managing them is important for a comprehensive understanding of an organization's environmental impact and for taking meaningful steps to reduce emissions.

For guidance on setting organizational boundaries for GHG calculations, refer to GHG Protocol Guidance https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.

Emission factors

Emission factors are crucial in environmental assessments, pollution control strategies, and calculating greenhouse gas inventories. They are specific values used to estimate the amount of pollutants or greenhouse gases released into the atmosphere due to a particular activity, process, or source. They serve as conversion factors that relate the quantity of a pollutant produced to a specific unit of activity or output. These factors are typically expressed as a ratio of the amount of pollutant emitted to a unit of the activity that generates those emissions.

To ensure the right calculation of emission based on actual and estimated data, the tool employs national and internationally calculated emission factors from different databases and sources:

– National emission factors are taken from GHG National Inventory Reports submitted to United Nations Framework Convention on Climate Change (UNFCCC)
– Local Institutional sources (linked in detail in "List of used emission factors")
– AIB
– DEFRA
– EXIOBASE
– New Zealand's Greenhouse Gas inventory from 1990 to 2021

By utilizing these comprehensive databases, the tool can provide a robust and reliable assessment of greenhouse gas emissions. This approach enables users to make informed decisions and take appropriate actions to mitigate their environmental impact.

The full list of used factors is available in part V of these guidelines. The use of emission factors for the relevant emission categories is as follows:

– [Scope 1] Stationary emissions: DEFRA 2022;
– [Scope 1] Non-stationary emissions: DEFRA 2022; EXIOBASE;
– [Scope 1] Fugitive emissions: DEFRA 2022
– [Scope 1] Agricultural emissions: GHG National Inventories Report Lithuania, Latvia, Estonia, for agricultural soils Ministry for the Environment. 2023. Measuring emissions: A guide for organisations: 2023 detailed guide. Wellington: Ministry for the Environment
– [Scope 2] Electricity: AIB; EXIOBASE,
– [Scope 2] Heat/Steam/Cool: DEFRA 2022; institution sources Lithuania, Latvia, Estonia

Functionality of the tool

The calculator is divided into 5 sheets – The introduction, Basic information, Scope 1 sheet, Scope 2 sheet and Report where the results of emissions will be visible.

The introduction sheet is a non-active sheet, describes the tool, main aim, provides links to manual and video tutorial and point of contact.

Basic information sheet is the first active sheet for information input and it must be filled out otherwise the emissions will not be calculated – namely reporting year, country and the sector the company operates in. There is also the possibility to add calculated emissions in scope 3 (if applicable).

Scope 1 sheet will ask to input information regarding your stationary emissions, non-stationary emissions, fugitive emissions and if your company operates in the agricultural sector – data for agriculture specific emissions.

Scope 2 sheet will ask you to input information regarding your electricity and heating usage.

For some categories of scope 1 and scope 2, it is possible to determine the emission level based on data other than real consumption. It is important to remember that it is only when real consumption is given that the most actual greenhouse gas emissions result is received.

The report will show the results of greenhouse gas emissions and will not require to input any additional data.

Where to get data for the calculation?

SOURCE OF EMISSIONS	DATA REQUIRED	SOURCE OF DATA
SCOPE 1: STATIONARY EMISSIONS	The consumption of a given solid fuel stated in the appropriate unit, e.g. kilograms/year	Invoices available in internal databases of the company
SCOPE 1: NON-STATIONARY EMISSIONS	The consumption of a given fuel in vehicles belonging to or under the control of the company stated in appropriate unit, e.g. in liters/year	Invoices from employees or, for example, data from fuel cards
SCOPE 1: REFRIGERANTS	The leakage of a given refrigerant; refrigerant given in kilograms/year	Report on maintenance of e.g. system air conditioning
SCOPE 2: ELECTRICITY	– Electricity consumption given in an appropriate unit, such as kWh/year – Information on whether the electricity comes from renewable sources	Invoices available in internal databases of the company
SCOPE 2 HEAT/COOLING/STEAM	Thermal energy consumption as network heat given in the appropriate unit, e.g., in GJ/year	Invoices available in internal databases of the company

Overview of the tool

The tool is divided on 5 parts:

1. INTRODUCTION

This is the informative part of the tool. There you can find:
– a description of the tool,
– its main goal
– links to the video and this manual
– point of contact in case of any issues with the tool

There is no action needed.

2. INFORMATION

In this section you are supposed to provide basic information regarding reporting and your company.

Enter company's name.

Select a reporting year – here please select the year for which you want to report emissions data.

Select your main country of operation – here please select whether your main area of operations is located in Estonia, Latvia or Lithuania. This information will appear automatically throughout the sheets in certain cells.

Select your sector – here please select one of the 22 sectors according to the NACE codes in which your company operates. If you are unsure of what to select, please consult the European Union NACE code list, which could be found here.

BASIC INFORMATION

Before filling in the data, please start here and provide basic information regarding the company.

Insert company's name	
Select a reporting year:	
Select your main country of operation:	
Select your sector:	
Do you calculate Scope 3 emissions?	

- please fill in the information below only if Scope 3 emissions are calculated -

Please provide total emissions in scope 3 in a reporting year:		tCO_2e

Please provide information regarding included categories and covered emissions sources	Covered in the calculations?	Commentary?
Category 1: Purchased goods and services		
Category 2: Capital goods		
Category 3: Fuel- and energy-related activities		
Category 4: Transportation & distribution upstream		
Category 5: Waste generated in operations		
Category 6: Business travel		
Category 7: Employee commuting		
Category 8: Upstream leased assets		
Category 9: Transportation & distribution downstream		
Category 10: Processing of sold products		
Category 11: Use of sold products		
Category 12: End of life treatment of sold products		
Category 13: Downstream leased assets		
Category 14: Franchises		
Category 15: Investments		

If your company calculates Scope 3 emissions, answer the question *Do you calculate scope 3 emissions?* "YES" and in the box below enter the amount of emissions and if you can provide details in the calculated categories. The indicated scope 3 amount will automatically appear in the Result sheet. If you don't calculate these emissions, simply select "NO". Please note that this tool does not provide Scope 3 emission calculations.

The above information will be used in further steps of the calculator.

3. SCOPE 1

The Calculator provides possibilities for GHG calculations based on most popular fuels, however if company business model, manufacturing processes, industry specific requirements or other circumstances require an extended calculation, we encourage the company to seek an individual GHG calculation that will provide the most accurate results of greenhouse gas emissions.

This section is divided into four parts:
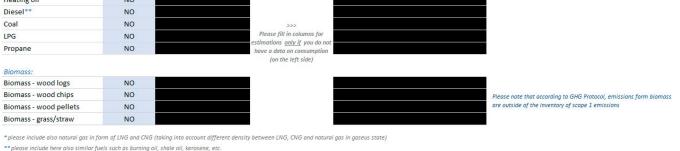
• Stationary emissions

Stationary emissions are one of the three emission sources in Scope 1. These emissions are due to the burning of fuels in stationary facilities like boilers for space heating of offices or warehouses owned by the organization. In the tool you can find most popular fuels used for these purposes. Please note that according to *GHG Protocol*[1], direct CO_2 emissions from the combustion of biomass shall not be included in scope 1 but reported separately. This is why emissions from biomass are not calculated in total Scope 1 emissions, with exception of methane (CH_4) and nitrious oxide (N_2O) as a result of biomass combustion will be added. For more information please see GHG Protocol Guidance, Appendix B: Accounting for Sequestered Atmospheric Carbon[2].

STATIONARY EMISSIONS
Emissions resulting from the use of fuel for heating buildings or for other purposes (e.g. in equipment such as a generator).

Please complete the data for all types of fuel consumed in stationary sources in the selected year. To start filling the data, please tick the box next to the selected fuel in the "Company use" column.
Please be aware that the most accurate level of emissions will be achieved by providing real consumption data, not by floor area.

FUEL	COMPANY USE	CONSUMPTION	UNIT		ESTIMATIONS BY FLOOR AREA	
					AREA	UNIT
Natural gas*	NO					
Heating oil	NO					
Diesel**	NO			>>>		
Coal	NO			*Please fill in columns for*		
LPG	NO			*estimations only if you do not*		
Propane	NO			*have a data on consumption (on the left side)*		
Biomass:						
Biomass - wood logs	NO					
Biomass - wood chips	NO					
Biomass - wood pellets	NO					
Biomass - grass/straw	NO					

Please note that according to GHG Protocol, emissions form biomass are outside of the inventory of scope 1 emissions

*please include also natural gas in form of LNG and CNG (taking into account different density between LNG, CNG and natural gas in gaseus state)
**please include here also similar fuels such as burning oil, shale oil, kerosene, etc.

To start entering the data you should first select in a column "Company use" which stationary fuels are used by your organization by selecting "YES". Then the black color will disappear, and you will have the possibility to enter data. Please note that if you do not select "YES", the data will not be counted.

In the "consumption" column please provide real fuel consumption that occurred in the reported year (indicated in the previous tab). In the "unit" column please select the right unit of the consumption.

In case you are not able to provide real consumption, there is an opportunity to specify the floor area heated with a particular fuel. Based on it, we will be able to estimate fuel consumption and emissions. The unit for area is m^2.

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[1] https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf (page 25)

[2] https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf (page 88)
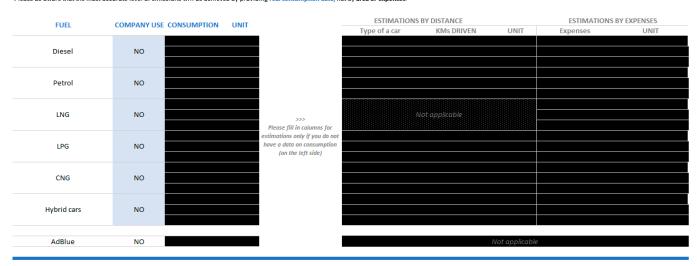
• Non-stationary emissions

Non-stationary emissions are the next category in scope 1. These are emissions from transportation, but only from vehicles owned or leased by the organization. In the tool you can find most popular fuels/types of cars used for these purposes.

NON-STATIONARY EMISSIONS

Emissions resulting from fuel burned by your own fleet (i.e. company cars e.g. for the CEO) of motor vehicles. Remember to include fuel burned in vehicles owned or managed by your organisation (including leased vehicles). Private cars of employees should not be taken into account.

Please enter the details of company vehicles in the selected year. Include all cars that are owned or supervised by the company, including leased vehicles.
Please be aware that the most accurate level of emissions will be achieved by providing real consumption data, not by **area or expenses**.

FUEL	COMPANY USE	CONSUMPTION	UNIT		ESTIMATIONS BY DISTANCE			ESTIMATIONS BY EXPENSES	
					Type of a car	KMs DRIVEN	UNIT	Expenses	UNIT
Diesel	NO								
Petrol	NO								
LNG	NO			>>> *Please fill in columns for estimations only if you do not have a data on consumption (on the left side)*	*Not applicable*				
LPG	NO								
CNG	NO								
Hybrid cars	NO								
AdBlue	NO				*Not applicable*				

As previously, to start entering the data you should select fuels in "company use" column by selecting "YES". Then the black color will disappear, and you will have the possibility to enter data.

Depending on the data that you have you can choose to calculate according to 3 options: real consumption levels or estimate by distance or expenses. Please note that you have to choose the estimation method and enter relevant data for either estimation by distance or estimation by expenses.

In "consumption" column please provide the real consumption of fuels that occurred in the reported year (indicated in the previous tab). In the "unit" column please select the right unit of the consumption.

In case you are not able to provide real consumption, there are two possibilities to calculate emissions. The first one is to provide the distance traveled on a given fuel, and the second one is the fuel expenses. As for the first method, please provide information on the type of vehicle (passenger car / van / truck) and next to the type of car please indicate the number of kilometers traveled. While your company might have different types of vehicles, in this case choose to include them into the nearest category if you are estimating by distance.

As for the second method, please provide expenses related to specific type of fuel in a reported year and the unit you provide the data in. Note that data provided should be in actual numbers, not in thousands. Estimation by expense is not related to type of car, do not enter any data for types of cars.

Whenever you have the opportunity use real consumption data, as it provides you with a more accurate picture of the emissions generated.
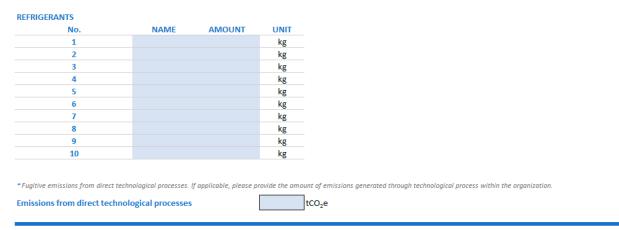
• Fugitive emissions

Fugitive emissions are due to: 1) leakage or additions of refrigerants and 2) emissions from direct technological processes (if applicable) in the reported year.

FUGITIVE EMISSIONS

Fugitive emissions from refrigeration and air conditioning result from leakage and service over the operational life of the equipment and from disposal at the end of the useful life of the equipment.

Please enter the amount of leakage or service over the operational life of the equipment and from disposal at the end of the useful life of the equipment. There is no possibility to estimate values.

REFRIGERANTS

No.	NAME	AMOUNT	UNIT
1			kg
2			kg
3			kg
4			kg
5			kg
6			kg
7			kg
8			kg
9			kg
10			kg

* Fugitive emissions from direct technological processes. If applicable, please provide the amount of emissions generated through technological process within the organization.

Emissions from direct technological processes [ ] tCO_2e

In the "name" column you should select the type of refrigerant that was used in the reported year. Additionally, in the "amount" column please provide the amount of leakage/addition of refrigerant in kilograms.

If you do not know whether you had any refrigerant added or for that calendar year you did have leakages or additions of refrigerants, simply leave this data unfilled. The name of the refrigerant should be indicated on the invoice or the service provider should be able to indicate that information.

Moreover, there is a possibility to add emissions from direct technological processes. If your organisation is aware of the level of emissions, you can put it here.

In this section there is no possibility to estimate emissions.

• Agriculture-specific emissions

Emissions from agriculture are produced in several ways. This section includes emissions from enteric fermentation, manure management, organic and artificial fertilizer use.

This category is only for companies operating in the agricultural sector. If you do not operate in this field, you move on to filling in information in Scope 2 emission sheet.

To see questions on emissions from agricultural activities, please answer "YES" to the question above the section.

Does your company operate in the agricultural industry? | YES |

After selecting "yes", fields for entering the data will appear. Based on these, emissions will be counted in the following categories: enteric fermentation, manure management, agricultural soils and soil N_2O emissions.

There is no possibility to estimate data.

– Enteric fermentation, Manure management, Organic fertilizer

Enteric fermentation is the process by which ruminant animals produce methane through digesting feed.

Manure management refers to the process of managing the excretion of livestock, particularly when they are not on paddocks, but also covers losses from manure that is deposited by livestock directly onto pasture, and it is distinct from losses from agricultural soils. The storage and treatment of manure produces GHG emissions.

Agricultural soils emit nitrous oxide due to the addition of nitrogen to soils through manure, dung and urine.

In terms of above categories, we suggest aggregated approach. Please provide number of animals in specified categories.

While the number of animals can vary throughout the year, there are several ways to reflect that in calculations. For example, select a cut-off date, such as December 31st of each calculation year or use the same system as accounting animal stock for other purposes. Use the selected method consistently for comparable calculations.

Additionally, please provide % of manure that goes into the field. This is essential as otherwise the emissions from agricultural soils will not be calculated.

ENTERIC FERMENTATION, MANURE MANAGEMENT AND ORGANIC FERTILISER

Enteric fermentation is the process by which ruminant animals produce methane through digesting feed. Manure management refers to the process of managing the excretion of livestock, particularly when they are not on paddocks, but also covers losses from manure that is deposited by livestock directly onto pasture, and it is distinct from losses from agricultural soils. The storage and treatment of manure produces GHG emissions. Agricultural soils emit nitrous oxide due to the addition of nitrogen to soils through manure, dung and urine.

Animal Type	Number of animals*	What % of manure goes into the field?
Dairy Cattle		
Non-dairy cattle		
Sheep		
Swine		
Goats		
Horses		
Poultry		
Rabbit		

*the number of animals at the end of reporting period (usually on 31st of December)

– Soil N$_2$O emissions or inorganic fertilizer use

Please provide number of kilograms used in specified categories.

SOIL N$_2$O EMISSIONS (MAINLY INORGANIC FERTILISERS)

The use of artificial fertiliser produces GHG emissions (soil N2O emissions). Artificial nitrogen fertiliser breaks down to produce nitrous oxide and carbon dioxide (urea).

Fertiliser type	AMOUNT	UNIT
Non-urea nitrogen		kg
Urea nitrogen not coated with urease inhibitor		kg
Urea nitrogen coated with urease inhibitor		kg

Examples of different categories of fertilisers:
– Non-urea nitrogen: Diammonium phosphate
– Urea nitrogen not coated with urease inhibitor: Nrich urea
– Urea nitrogen coated with urease inhibitor; Agrotain, SustaiN, N-Protect

4. SCOPE 2

Scope 2 includes indirect energy emissions related to the consumption of electricity, district heating, technical steam or district cooling purchased by the organisation, i.e., to own, leased and rented facilities under the operational control of the organisation (e.g., offices/warehouses).

It is important to remember to report the amount of energy purchased from external suppliers and not to include the energy generated by the combustion of fuels within the organisation. Also note that district heat is NOT heat purchased from a local boiler house, just as district cooling is NOT chilled water purchased from a local chiller or air conditioning unit (cases encountered, for example, in rented offices).

Scope 2 section is divided into two parts:

• Electricity

In this section you should answer three questions:
1. how much electricity did you purchase in the reported year – please provide total purchased energy in MWh/kWh excluding from renewable sources (or RES)
2. how much renewable energy source electricity (RES) did you purchase in the reported year – please provide total RES energy in MWh/kWh
3. do you have a guarantee of origin or PPA in the reported year – please answer "YES" or "NO"

The first column country will be automatically pre-filled based on your choice of country in *Information* sheet. Please note that the calculator only provides possibilities to choose from a list of European countries. If your company operates in more than three countries, you should choose the countries with largest material impact or run the calculations several times while choosing different countries.

In case you do not know the answer to the 1st question above, we provide possibility to estimate emissions based on 2 additional questions. These relate to electricity expenditure in the reported year. For each country you will be requested to provide the amount paid in actual numbers, not presented in terms of thousands.

If you do not know if the energy comes from renewable sources (for example solar or wind), leave the cells blank or you can also put "0". You can check with your electricity provider about the source of electricity.

If you buy renewable electricity sources and have a contract/PPA/guarantees of origin, you can also mark that in the calculator and it will be reflected in the Results sheet.

ELECTRICITY

Please indicate all sources of purchased or externally supplied electricity and the annual consumption of this energy in the relevant unit. In most cases, consumption is the sum of purchase and production.

Please be aware that the calculator only covers countries from the Baltics. First column will automatically fill in as selected country of operation. **If you do not have an energy purchase value,**

		Choose country:	Lithuania			Unit
	How much **non-RES* electricity** did you purchase in the selected year?					MWh
	Do you have a signed **contract/Power Purchase Agreement** (PPA) or **guarantees of origin** that you buy yourself for RES electricity?		NO	NO	NO	
PURCHASE	How much **RES electricity** did you buy in the selected year?					
	↓↓↓ *Please fill in columns for estimations only if you do not have data above* ↓↓↓					
	ESTIMATION: How much did you pay for non-RES electricty in the year selected?					EUR
	ESTIMATION: How much did you pay for RES electricity in the year selected?					EUR

* RES - renewable energy sources

NB! The company might directly buy electricity generated by renewable energy sources or RES (such as solar or wind) from the electricity provider or it can self-generate electricity. Electricity generated by RES (or thermal energy derived from RES) does not generate a carbon footprint. If the company self-generates electricity from RES it can account for that in the calculator in several ways. If all self-generated electricity was consumed on site, the company can either input the consumption data in the part for RES electricity or choose not to. If the self-generated electricity was fed into the electricity market and later purchased without a guarantee of origin/PPA it should be accounted as non-RES electricity.

• Heating, Cooling and process energy

In this section, please provide information on heating energy, cooling energy and steam. Please be aware that it is only possible to estimate emissions on a floor area basis for heating energy and not for cooling energy and steam.

HEATING, COOLING AND PROCESS ENERGY (STEAM)

Data on **externally** purchased or supplied heat/cooling energy, e.g. district heating. Please note that district heat is NOT heat purchased from a local boiler house, just as district cooling is NOT chilled water purchased from a local chiller or air conditioning unit (cases encountered, for example, in rented offices). Do not include the energy you produce that comes from RES. It does not generate emissions in Scope 2.

Please be aware that the most accurate level of emissions will be achieved by providing real consumption data, not by **area**.

					ESTIMATIONS BY FLOOR AREA	
Category	**Applicable?**	**CONSUMPTION**	**UNIT**	>>> *Please fill in columns for estimations only if you do not have a data on consumption (on the left side)*	**AREA**	**UNIT**
Heating energy	NO					
Cooling energy	NO					
Steam	NO					

You should provide data on externally purchased or supplied heating/cooling energy, for example district heating. Please note that district heat is NOT heat delivered by your locally installed boiler (as it will show up in electricity consumption or fuel consumption), just as district cooling is NOT chilled water purchased from a local chiller or air conditioning unit (cases encountered, for example, in rented offices). Do not include heating energy that comes from renewable energy sources (or abbreviated RES). It does not generate emissions in Scope 2.

Please be aware that the most accurate level of emissions will be achieved by providing real consumption data and not by estimating according to floor area.

Select the applicable category by choosing "YES" and proceed to fill in the data of consumption.

5. REPORT

Report is the last section of the tool. Here you can see the results of emissions. You will not be required or be able to put in any data here.

In the top section you can see the general results of your emissions. Your total emissions, scope 1 emissions and scope 2 emissions (and if you entered data for Scope 3 emissions) will be presented here. Additionally, to better understand the amount of emissions, the calculator provides a comparison of the result with the number of trees needed to absorb this amount of carbon dioxide, the number of kilometers driven that would generate similar levels of emissions and the number of laps around the world.

Scope 1 (direct emissions)	0,0 tCO$_2$e/year	% share	% actual data
Stationary emissions	0,0 tCO$_2$e/year	0,0%	0%
Non-stationary emissions	0,0 tCO$_2$e/year	0,0%	0%
Fugitive emissions	0,0 tCO$_2$e/year	0,0%	0%
Biogenic emissions	0,0 tCO$_2$e/year	0,0%	0%

Scope 2 (indirect emissions)	0,0 tCO$_2$e/year	% share	% actual data
Electricity	0,0 tCO$_2$e/year	0,0%	0%
Heating/cooling energy	0,0 tCO$_2$e/year	0,00%	0%
RES certificates / PPA available?	No RES certificates/PPA available		

Scope 3 (other indirect emissions)		
Sum of Scope 3 emissions	0,0 tCO$_2$e/year	Data provided directly by the company
Covered categories	0	

In this area the tool shows the breakdown of the various emission scopes into their component parts. It can be used to find out which emission category has the highest value, which categories are being estimated and do not yet have a proper data collection process.

If you have marked that you have Renewable energy sources (RES) certificates it will show up under Scope 2 emission data.

Scope 2 (indirect emissions)	0,0 tCO$_2$e/year	% share	% actual data
Electricity	0,0 tCO$_2$e/year	0,0%	0%
Heating/cooling energy	0,0 tCO$_2$e/year	0,00%	0%
RES certificates / PPA available?	No RES certificates/PPA available		

The following section of the report contains three graphs that illustrate these results and let you see what the distribution of actual and estimated data is.

Glossary

GHG – greenhouse gas emissions. The main greenhouse gases are carbon dioxide – CO_2; methane – CH_4; nitrous oxide – N_2O; sulphur hexafluoride – SF_6; the HFC (hydrofluorocarbon) and PFC (perfluorocarbon) gas groups.

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

Guarantees of origin – guarantees of electricity origin are an element of the EU's environmental policy, which aims at disclosing and certifying to the end consumer that a certain amount of electricity delivered to the distribution network or transmission grid was generated from renewable energy sources or in the process of high-efficiency cogeneration (CHP, i.e. Combined Heat and Power).

NACE code – Nomenclature of Economic Activities or NACE is the European statistical classification of economic activities. NACE groups organizations according to their business activities. Can check your NACE code here.

PPA – Power Purchase Agreement is a long-term contract for the supply of electricity between two parties, usually between an electricity producer and a customer (electricity consumer or seller). The PPA details all the terms and conditions of the electricity business – the amount of electricity to be supplied, the negotiated prices, the method of accounting and penalties for non-compliance.

RES – Renewable Energy Sources. RES include wind, solar, aerothermal, geothermal, hydro, ocean energy sources, biomass and the biodegradable fraction of waste.

Scope 1 – direct emissions from owned or controlled sources.

Scope 2 – indirect emissions from purchased energy sources.

Scope 3 – all other indirect emissions that occur because of organization's activities but do not fall under Scope 1 or Scope 2. There are 15 categories that fall under Scope 3 emissions. Scope 3 emissions can include emissions associated with supply chain activities, business travel, employee commuting, product transportation, and the use of sold products to name a few.

List of used emission factors

Category	Subcategory	Emission factor	Unit	Database
	SCOPE 1			
Stationary emissions	Natural gas (GJ)	51,103	kgCO$_2$e	DEFRA 2022
	Heating oil (Litres)	2,540	kgCO$_2$e	DEFRA 2022
	Heating oil (kWh)	0,260	kgCO$_2$e	DEFRA 2022
	Coal (Tonnes)	2 883,260	kgCO$_2$e	DEFRA 2022
	LPG (Litres)	1,557	kgCO$_2$e	DEFRA 2022
	LPG (kWh)	0,210	kgCO$_2$e	DEFRA 2022
	LPG (Tonnes)	2 939,290	kgCO$_2$e	DEFRA 2022
	Propane (Litres)	1,540	kgCO$_2$e	DEFRA 2022
	Propane (kWh)	0,210	kgCO$_2$e	DEFRA 2022
Non-stationary emissions	Diesel (Litres)	2,699	kgCO$_2$e	DEFRA 2022
	Petrol (Litres)	2,162	kgCO$_2$e	DEFRA 2022
	LNG (Litres)	1,158	kgCO$_2$e	DEFRA 2022
	LNG (Tonnes)	2559,17	kgCO$_2$e	DEFRA 2022
	LNG (kWh)	0,184	kgCO$_2$e	DEFRA 2022
	LPG (Litres)	1,557	kgCO$_2$e	DEFRA 2022
	CNG (Litres)	0,444	kgCO$_2$e	DEFRA 2022
	CNG (Tonnes)	2539,25	kgCO$_2$e	DEFRA 2022
	CNG (kWh)	0,183	kgCO$_2$e	DEFRA 2022
	Hybrid cars	2,162	kgCO$_2$e	DEFRA 2022
	AdBlue (Tonnes)	0,238	tCO$_2$e	DEFRA 2022 (Methodology Paper for Conversion Factors Final Report)
Fugitive emissions	Please look at emission factors in DEFRA 2022 database			

Category	Subcategory	Emission factor	Unit	Database
Agricultural industry – Enteric Fermentation (Latvia)	Dairy cattle	4,2342	tCO$_2$e/unit	Based on LV GHG National Inventory Report 2023[3]
	Non-dairy cattle	2,3271	tCO$_2$e/unit	
	Sheep	0,1680	tCO$_2$e/unit	
	Swine	0,0315	tCO$_2$e/unit	
	Goats	0,1050	tCO$_2$e/unit	
	Horses	0,3780	tCO$_2$e/unit	
	Rabbit	0,0124	tCO$_2$e/unit	
	Poultry	0	tCO$_2$e/unit	Ministry for the Environment. 2023. Measuring emissions: A guide for organisations: 2023 detailed guide. Wellington: Ministry for the Environment
Agricultural industry – Enteric Fermentation (Lithuania)	Dairy cattle	3,7038	tCO$_2$e/unit	Based on LT GHG National Inventory Report 2023[4]
	Non-dairy cattle	1,9275	tCO$_2$e/unit	
	Sheep	0,2129	tCO$_2$e/unit	
	Swine	0,0294	tCO$_2$e/unit	
	Goats	0,1050	tCO$_2$e/unit	
	Horses	0,3780	tCO$_2$e/unit	
	Rabbit	0,0124	tCO$_2$e/unit	
	Poultry	0	tCO$_2$e/unit	Ministry for the Environment. 2023. Measuring emissions: A guide for organisations: 2023 detailed guide. Wellington: Ministry for the Environment
Agricultural industry – Enteric Fermentation (Estonia)	Dairy cattle	4,3848	tCO$_2$e/unit	Based on EE GHG National Inventory Report 2023[5]
	Non-dairy cattle	2,4497	tCO$_2$e/unit	
	Sheep	0,1680	tCO$_2$e/unit	
	Swine	0,0235	tCO$_2$e/unit	
	Goats	0,1050	tCO$_2$e/unit	
	Horses	0,3780	tCO$_2$e/unit	
	Rabbit	0,0124	tCO$_2$e/unit	Due to lack of data, values from LV and LT were used
	Poultry	0	tCO$_2$e/unit	Ministry for the Environment. 2023. Measuring emissions: A guide for organisations: 2023 detailed guide. Wellington: Ministry for the Environment

[3] Latvia National Inventories report, CRF tables: https://unfccc.int/documents/627722

[4] Lithuanian National Inventories report, CRF tables: https://unfccc.int/documents/627650

[5] Estonia National Inventories report, CRF tables: https://unfccc.int/documents/627752

Category	Subcategory	Emission factor	Unit	Database
Agricultural industry – Manure Management (Latvia)	Dairy cattle	0,5160	tCO$_2$e/unit	Based on LV GHG National Inventory Report 2023
	Non-dairy cattle	0,0566	tCO$_2$e/unit	
	Sheep	0,0040	tCO$_2$e/unit	
	Swine	0,0477	tCO$_2$e/unit	
	Goats	0,0027	tCO$_2$e/unit	
	Horses	0,0328	tCO$_2$e/unit	
	Rabbit	0,0004	tCO$_2$e/unit	
	Poultry	0,0017	tCO$_2$e/unit	
Agricultural industry – Manure Management (Lithuania)	Dairy cattle	0,3688	tCO$_2$e/unit	Based on LT GHG National Inventory Report 2023
	Non-dairy cattle	0,2472	tCO$_2$e/unit	
	Sheep	0,0086	tCO$_2$e/unit	
	Swine	0,0559	tCO$_2$e/unit	
	Goats	0,0027	tCO$_2$e/unit	
	Horses	0,0328	tCO$_2$e/unit	
	Rabbit	0,0006	tCO$_2$e/unit	
	Poultry	0,0017	tCO$_2$e/unit	
Agricultural industry – Manure Management (Estonia)	Dairy cattle	0,9632	tCO$_2$e/unit	Based on EE GHG National Inventory Report 2023
	Non-dairy cattle	0,5457	tCO$_2$e/unit	
	Sheep	0,0040	tCO$_2$e/unit	
	Swine	0,1243	tCO$_2$e/unit	
	Goats	0,0027	tCO$_2$e/unit	
	Horses	0,0328	tCO$_2$e/unit	
	Rabbit	0,0004	tCO$_2$e/unit	
	Poultry	0,0017	tCO$_2$e/unit	
Agricultural industry – Agricultural soils (all countries)	Dairy cattle	377,20	kgCO$_2$e/unit	Ministry for the Environment. 2023. Measuring emissions: A guide for organisations: 2023 detailed guide. Wellington: Ministry for the Environment
	Non-dairy cattle	226,60	kgCO$_2$e/unit	
	Sheep	31,50	kgCO$_2$e/unit	
	Swine	42,00	kgCO$_2$e/unit	
	Goats	61,50	kgCO$_2$e/unit	
	Horses	290,90	kgCO$_2$e/unit	
	Poultry	1,54	kgCO$_2$e/unit	
Agricultural industry – Soil N$_2$O emissions (Estonia)	Non-urea nitrogen	0,0031	tCO$_2$e/1 kg N	Based on EE GHG National Inventory Report 2023[6]
	Urea nitrogen not coated with urease inhibitor	0,0031	tCO$_2$e/1 kg N	
	Urea nitrogen coated with urease inhibitor	0,0062	tCO$_2$e/1 kg N	

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[6] Estonia National Inventories report, CRF tables: https://unfccc.int/documents/627752

Category	Subcategory	Emission factor	Unit	Database
Agricultural industry – Soil N_2O emissions (Latvia)	Non-urea nitrogen	0,0031	tCO_2e/1 kg N	Based on LV GHG National Inventory Report 2023[7]
	Urea nitrogen not coated with urease inhibitor	0,0031	tCO_2e/1 kg N	
	Urea nitrogen coated with urease inhibitor	0,0062	tCO_2e/1 kg N	
Agricultural industry – Soil N_2O emissions (Lithuania)	Non-urea nitrogen	0,0031	tCO_2e/1 kg N	Based on LT GHG National Inventory Report 2023[8]
	Urea nitrogen not coated with urease inhibitor	0,0031	tCO_2e/1 kg N	
	Urea nitrogen coated with urease inhibitor	0,0062	tCO_2e/1 kg N	
SCOPE 2				
Electricity	Latvia (kWh) 2022, 2023	0,511	$kgCO_2e$	AIB 2022[9]
	Latvia (kWh) 2021	0,303	$kgCO_2e$	AIB 2021[10]
	Latvia (kWh) 2020	0,422	$kgCO_2e$	AIB 2020[11]
	Lithuania (kWh) 2022, 2023	0,466	$kgCO_2e$	AIB 2022[12]
	Lithuania (kWh) 2021	0,385	$kgCO_2e$	AIB 2021[13]
	Lithuania (kWh) 2020	0,340	$kgCO_2e$	AIB 2020[14]
	Estonia (kWh) 2022, 2023	0,715	$kgCO_2e$	AIB 2022[15]
	Estonia (kWh) 2021	0,637	$kgCO_2e$	AIB 2021[16]
	Estonia (kWh) 2020	0,574	$kgCO_2e$	AIB 2020[17]

[7] Latvia National Inventories report, CRF tables: https://unfccc.int/documents/627722

[8] Lithuanian National Inventories report, CRF tables: https://unfccc.int/documents/627650

[9] https://www.aib-net.org/sites/dASault/files/assets/facts/residual-mix/2022/AIB_2022_Residual_Mix_Results_inclAnnex.pdf (page 7)

[10] https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2021/AIB_2021_Residual_Mix_Results_1_1.pdf (page 6)

[11] https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2020/AIB_2020_Residual_Mix_Results.pdf (page 6)

[12] https://www.aib-net.org/sites/dASault/files/assets/facts/residual-mix/2022/AIB_2022_Residual_Mix_Results_inclAnnex.pdf (page 7)

[13] https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2021/AIB_2021_Residual_Mix_Results_1_1.pdf (page 6)

[14] https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2020/AIB_2020_Residual_Mix_Results.pdf (page 6)

[15] https://www.aib-net.org/sites/dASault/files/assets/facts/residual-mix/2022/AIB_2022_Residual_Mix_Results_inclAnnex.pdf (page 7)

[16] https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2021/AIB_2021_Residual_Mix_Results_1_1.pdf (page 6)

[17] https://www.aib-net.org/sites/default/files/assets/facts/residual-mix/2020/AIB_2020_Residual_Mix_Results.pdf (page 6)

Category	Subcategory	Emission factor	Unit	Database
Heating energy	Lithuania (MWh) 2022, 2023	0,1	tCO$_2$e	In absence of newer data, EF taken from previous year, same as below.
	Lithuania (MWh) 2021	0,1	tCO$_2$e	Lithuanian Environmental protection agency[18]
	Lithuania (MWh) 2020	0,1	tCO$_2$e	
	Estonia (MWh) 2022, 2023	0,139	tCO$_2$e	In absence of newer data, EF taken from previous year, same as below.
	Estonia (MWh) 2021	0,139	tCO$_2$e	Estonian Environmental Research Centre EKUK[19]
	Estonia (MWh) 2020	0,130	tCO$_2$e	
	Latvia (MWh) 2022, 2023	0,088	tCO$_2$e	In absence of newer data, EF taken from previous year, same as below. Only CO$_2$ figures are available.
	Latvia (MWh) 2021	0,088	tCO$_2$e	Latvian Ministry of Climate[20] Only CO$_2$ figures are available.
	Latvia (MWh) 2020	0,0911	tCO$_2$e	
	District heating (MWh)	0,170	tCO$_2$e	DEFRA 2022
District cooling	Lietuva (MWh) 2020–2022	0,1	tCO$_2$e	In absence of district cooling data, EF taken from Lithuanian Environmental protection agency[21]
	Latvija (MWh) 2020–2022	0,139	tCO$_2$e	In absence of district cooling data, EF taken from Latvian Ministry of Climate[22] Only CO$_2$ figures are available.
	Estonia (MWh) 2020–2023	0,088	tCO$_2$	In absence of district cooling data, EF taken from Estonian Environmental Research Centre EKUK[23]

[18] httpstps://w.e-tar.lit/portal/lit/legal/tar.a2e8b0079pc9/asr

[19] https://kasvuhoonegaasid.ee/#/emission-factors/inventory-emission-factors/i_heat_EF

[20] https://www.kem.gov.lv/lv/siltumnicefekta-gazu-emisiju-aprekina-metodika

[21] httpstps://w.e-tar.lit/portal/lit/legal/tar.a2e8b0079pc9/asr

[22] https://www.kem.gov.lv/lv/siltumnicefekta-gazu-emisiju-aprekina-metodika

[23] https://kasvuhoonegaasid.ee/#/emission-factors/inventory-emission-factors/i_heat_EF

Category	Subcategory	Emission factor	Unit	Database
Steam	Lithuania (MWh) 2022, 2023	0,1	tCO$_2$e	In absence of newer data, EF taken from previous year, same as below.
	Lithuania (MWh) 2021	0,1	tCO$_2$e	Lithuanian Environmental protection agency[24]
	Lithuania (MWh) 2020	0,1	tCO$_2$e	
	Estonia (MWh) 2022, 2023	0,139	tCO$_2$e	In absence of newer data, EF taken from previous year, same as below.
	Estonia (MWh) 2021	0,139	tCO$_2$e	Estonian Environmental Research Centre EKUK[25]
	Estonia (MWh) 2020	0,130	tCO$_2$e	
	Latvia (MWh) 2022, 2023	0,088	tCO$_2$	In absence of newer data, EF taken from previous year, same as below.
	Latvia (MWh) 2021	0,088	tCO$_2$	Latvian Ministry of Climate[26]
	Latvia (MWh) 2020	0,0911	tCO$_2$	

EMISSIONS NOT INCLUDED IN SCOPE 1, 2, 3				

Category	Subcategory	Emission factor	Unit	Database
Biomass	Biomass – wood chips (Tonnes)	39,788	kgCO$_2$e	DEFRA 2022
	Biomass – wood chips (kWh)	0,0105	kgCO$_2$e	DEFRA 2022
	Biomass – wood logs (Tonnes)	43,036	kgCO$_2$e	DEFRA 2022
	Biomass – wood logs (kWh)	0,0105	kgCO$_2$e	DEFRA 2022
	Biomass – wood pellets (Tonnes)	50,555	kgCO$_2$e	DEFRA 2022
	Biomass – wood pellets (kWh)	0,0105	kgCO$_2$e	DEFRA 2022
	Biomass – grass/straw (Tonnes)	48,048	kgCO$_2$e	DEFRA 2022
	Biomass – grass/straw (kWh)	0,0129	kgCO$_2$e	DEFRA 2022

[24] https://www.e-tar.lt/portal/lt/legalAct/TAR.A2E8B0079BC9/asr

[25] https://kasvuhoonegaasid.ee/#/emission-factors/inventory-emission-factors/i_heat_EF

[26] https://www.kem.gov.lv/lv/siltumnicefekta-gazu-emisiju-aprekina-metodika