



Carbon Accounting Report 2022

This report provides an overview of the organisation's greenhouse gas (GHG) emissions, which is an integrated part of the organisation's climate strategy. GHG emissions accounting is a fundamental tool in identifying tangible measures to reduce GHG emissions. The annual GHG emissions accounting report enables the organisation to benchmark performance indicators and evaluate progress over time.

Consolidation approach used for the GHG emissions accounting:

This report comprises the following organisational units:

This report excludes the following organisational units:

Please add a short explanation of why the organisational units are excluded.

Is there any timeline for including omitted sites/locations in the future?

Please explain.

The input is based on consumption data from internal and external sources, which has then been converted into tonnes CO₂-equivalents (tCO₂e) using generic and/or specific emission factors. The GHG emissions accounting is based on the international standard; *A Corporate Accounting and Reporting Standard*, developed by the Greenhouse Gas Protocol Initiative (GHG Protocol). The GHG Protocol is the most widely used and recognised international standard for measuring greenhouse gas emissions on a company level, and is the basis for the ISO standard 14064-1.

Reporting Year Energy and GHG Emissions

Emission source	Description	Consumption	Unit	Energy (MWh)	Emissions tCO ₂ e	% share
Transportation total				113.6	28.8	54.1 %
Diesel		10,659.0	liters	113.6	28.8	54.1 %
Scope 1 total				113.6	28.8	54.1 %
Electricity total				88.8	2.3	4.3 %
Electricity Nordic mix		88,756.0	kWh	88.8	2.3	4.3 %
Electric vehicles total				21.3	0.6	1.1 %
Electric car Nordic		112,350.0	km	21.3	0.6	1.1 %
Scope 2 total				110.1	2.9	5.4 %
Business travel total				-	21.5	40.5 %
Air travel, continental		48.0	flight trip	-	4.3	8.1 %
Air travel, intercontinental		26.0	flight trip	-	17.2	32.4 %
Scope 3 total				-	21.5	40.5 %
Total				223.7	53.2	100.0 %
KJ				805,418,784.0		

Reporting Year Market-Based GHG Emissions

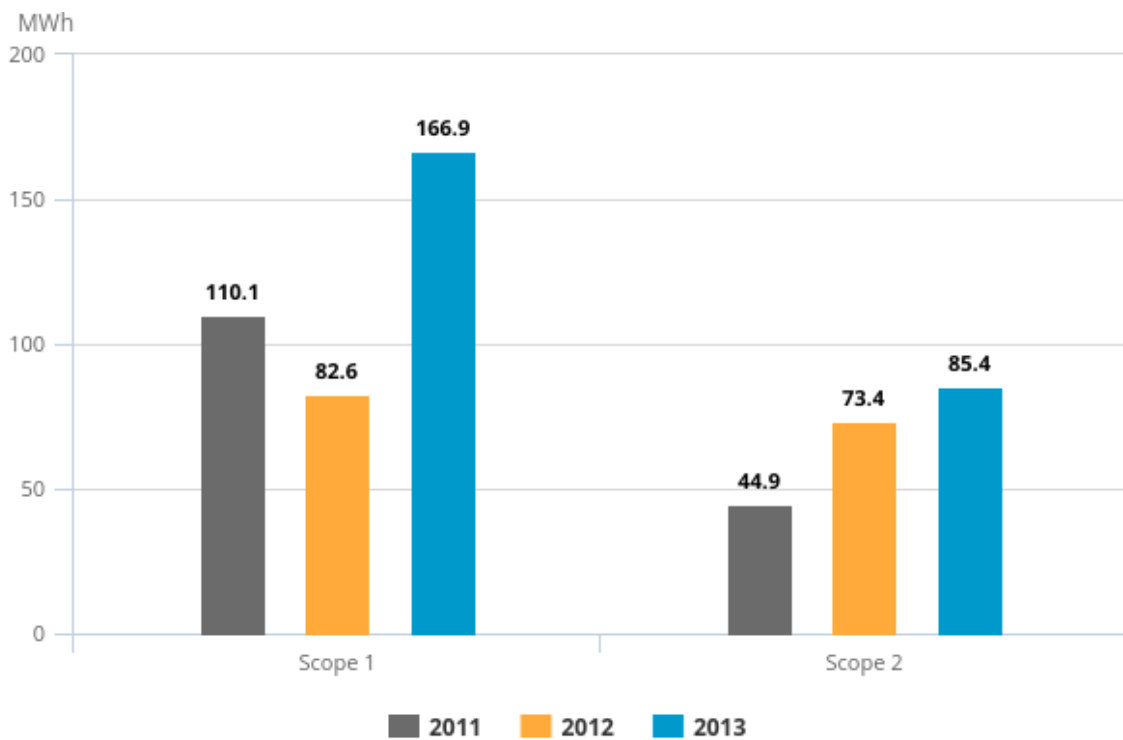
Category	Unit	2022
Electricity Total (Scope 2) with Market-based calculations	tCO ₂ e	23.6
Scope 2 Total with Market-based electricity calculations	tCO ₂ e	24.2
Scope 1+2+3 Total with Market-based electricity calculations	tCO ₂ e	74.5

The above provides a comprehensive summary of the GHG emissions accounting of {company name} for the reporting year. It illustrates the scopes and scope 3 categories included, along with the respective emission sources. The table presents consumption data and its corresponding reporting unit (e.g., kg, liters, kgCO₂e, km), consumption data converted into energy (MWh) and tCO₂e, and the % share each emission source represented in the overall GHG emissions accounting.

Annual GHG Emissions

Category	Description	2020	2021	2022	% change from previous year
Transportation total		12.6	12.6	28.8	128.6 %
Diesel (NO)		12.6	12.6	-	-100.0 %
Diesel		-	-	28.8	100.0 %
Scope 1 total		12.6	12.6	28.8	128.6 %
Electricity location-based total		2.3	3.2	2.3	-28.1 %
Electricity Nordic mix		2.3	3.2	2.3	-28.1 %
Electric vehicles total		0.7	-	0.6	-14.3 %
Electric car Nordic		0.7	-	0.6	100.0 %
Scope 2 total		3.1	3.2	2.9	-9.4 %
Waste total		43.3	55.2	-	27.5 %
Paper waste, recycled		0.1	-	-	-
Residual waste, incinerated		43.2	55.2	-	-100.0 %
Plastic waste, recycled		-	-	-	-
Business travel total		1.7	3.5	21.5	514.3 %
Mileage all. car (NO)		0.6	-	-	-
Air travel, domestic		0.7	0.2	-	-100.0 %
Air travel, continental		0.4	-	4.3	100.0 %
Air travel, intercontinental		-	3.3	17.2	421.2 %
Scope 3 total		45.0	58.8	21.5	-63.4 %
Total		60.6	74.6	53.2	-28.7 %
Percentage change		100.0 %	23.1 %	-28.7 %	

Annual energy consumption (MWh) Scope 1 & 2



Annual Market-Based GHG Emissions

Category	Unit	2020	2021	2022
Electricity Total (Scope 2) with Market-based calculations	tCO ₂ e	14.9	23.8	23.6
Scope 2 Total with Market-based electricity calculations	tCO ₂ e	15.7	23.8	24.2
Scope 1+2+3 Total with Market-based electricity calculations	tCO ₂ e	73.2	95.1	74.5
Percentage change		100.0 %	29.9 %	-21.7 %

Methodology and sources

The Greenhouse Gas Protocol initiative (GHG Protocol) was developed by the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). This analysis is done according to *A Corporate Accounting and Reporting Standard Revised edition*, currently one of four GHG Protocol accounting standards on calculating and reporting GHG emissions. The reporting considers the following greenhouse gases, all converted into CO₂-equivalents: CO₂, CH₄ (methane), N₂O (laughing gas), SF₆, HFCs, PFCs and NF₃.

For corporate reporting, two distinct approaches can be used to consolidate GHG emissions: the equity share approach and the control approach. The most common consolidation approach is the control approach, which can be defined in either financial or operational terms.

The carbon inventory is divided into three main scopes of direct and indirect emissions.

Scope 1 includes all direct emission sources. This includes all use of fuels for stationary combustion or transportation, in owned and, depending on the consolidation approach selected, leased, or rented assets. It also includes any process emissions, from e.g. chemical processes, industrial gases, direct methane emissions etc., as well as leakage of refrigerants.

Scope 2 includes indirect emissions related to purchased energy, including electricity and heating/cooling in assets owned/controlled by the organisation.

In January 2015, the GHG Protocol published new guidelines for calculating emissions from electricity consumption. Primarily two methods are used to “allocate” the GHG emissions generated by electricity production to the end consumers on a given grid, namely the location-based and the market-based method. The location-based method reflects the average emission intensity of the grids on which energy consumption occurs, while the market-based method reflects emissions from electricity that companies have purposefully chosen (or not chosen).

Organisations who report on their GHG emissions will now have to disclose both the location-based emissions from the production of electricity, and the market-based emissions related to the potential purchase of Guarantees of Origin (GoOs) and Renewable Energy Certificates (RECs).

The purpose of this amendment in the reporting methodology is on the one hand to show the impact of energy efficiency measures, and on the other hand to display how the acquisition of GoOs or RECs affect the GHG emissions. Using both methods in the emissions accounting highlights the effect of both of these types of measures regarding electricity consumption.

The location-based method: The location-based method is based on statistical emissions information and electricity output aggregated and averaged within a defined geographic boundary and during a defined time period. Within this boundary, the different energy producers utilize a mix of energy resources, where the use of fossil fuels (coal, oil, and gas) result in direct GHG-emissions. These emissions are reflected in the location-based emission factor. Most location-based electricity emission factors used in CEMAsys are based on national gross electricity production mixes and are published by the International Energy Agency's statistics (IEA Stat). Emission factors per fuel type are in these calculations based on assumptions in the IEA methodological framework. Emission factors for district heating/cooling are either based on actual (local) production mixes, or average national statistics.

The market-based method: The choice of emission factors when using this method is determined by whether the organisation acquires GoOs/RECs or not. When selling GoOs for renewable electricity or RECs, the supplier guarantees that the same amount of electricity has been produced exclusively from renewable sources, which is assumed to have an emission factor of 0 grams CO₂e per kWh. However, for electricity without GoOs or RECs, the emission factor should instead be based on the remaining electricity supply after all GoOs for renewable electricity and/or RECs have been sold and cancelled. This is called the residual mix, which in most cases is connected to a substantially higher emission factor than the location-based emission

factor.

Scope 3 includes indirect emissions resulting from other value chain activities. The scope 3 emissions are a result of the company's upstream and downstream activities, which are not directly controlled by the organisation. Examples include production of purchased goods and services, business travel, goods transportation, waste handling, use of sold products, etc.

In general, the carbon accounting should include information that stakeholders, both internal and external to the company, need for their decision making. An important aspect of relevance is the selection of an appropriate inventory boundary which reflects the substance and economic reality of the company's business relationships.

Sources:

DEFRA (2023). UK Government GHG Conversion Factors for Company Reporting, [Department for Business, Energy & Industrial Strategy](#) (DEFRA)

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IMO (2020). Reduction of GHG emissions from ships - Third IMO GHG Study 2014 (Final report). International Maritime Organisation, <https://www.imo.org/en/ourwork/environment/pages/greenhouse-gas-studies-2014.aspx>

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WBCSD/WRI (2011). Corporate value chain (Scope 3) accounting and reporting standard: Supplement to the GHG Protocol corporate accounting and reporting standard. World Business Council on Sustainable Development (WBCSD), Geneva, Switzerland /World Resource Institute (WRI), Washington DC, USA, 149 pp.

WBCSD/WRI (2015). GHG protocol Scope 2 guidance: An amendment to the GHG protocol corporate standard. World Business Council on Sustainable Development (WBCSD), Geneva, Switzerland /World Resource Institute (WRI), Washington DC, USA, 117 pp.

The reference list above is not necessarily complete, but contains the most essential references used in CEMAsys. In addition, several local/national sources may be used, depending on the selection of emission factors.